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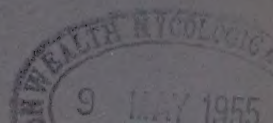
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ERRATA

- V.B. 25, 693; page 115, line 3 from below: For (*Nanophyetus* [*Troglotremia*] *salmonicola*), please read (*Nanophyetus* [*Troglotremia*] *salminicola*); and on page 116, last line of abstr.: for *helmintheca*, please read *helmintheca*.
- V.B. 25, 885. The first author's name should read: Kirchheimer, W. F.
- V.B. 25, 977. The author's name should read: Gómez Ortiz, E.

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Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius*, being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin*.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

The Editor will be glad to receive books for review in the *Veterinary Bulletin*.

THE
VETERINARY BULLETIN

Vol. 25]

May, 1955

[No. 5

DISEASES CAUSED BY BACTERIA AND FUNGI

WAHL, R. & FOUAGE, J. (1954). A propos des techniques d'identification des staphylocoques pathogènes par les phages. I.—Opérations préliminaires et identification proprement dite. [Identification of pathogenic staphylococci by means of bacteriophages.]—*Ann. Inst. Pasteur*. **87**, 159-168. 1239

The authors gave details of the methods they used for the phage-typing of staphylococci. They described the preparation of the media, of the plates for demonstrating phage activity, and of the phage cultures and their titration, together with the method of carrying out the test and its interpretation.—M. B. HAWKSLEY.

HOWARD, J. G. (1954). Diffuse antigens in relation to the virulence to mice of *Staphylococcus aureus*.—*J. Path. Bact.* **68**, 177-186. [Author's summary modified.] 1240

The number of antigen-antibody flocculation lines formed on filter paper soaked in antitoxin by strains of *Staph. aureus* was directly related to the relative virulence of the organisms for mice. Strains having a complex haemolysin pattern produced more flocculation lines than strains having a simple pattern, or than non-haemolytic strains. The formation of larger numbers of lines was associated with the production of higher titres of alpha toxin in broth cultures. Phage pattern and sensitivity to penicillin were not related to antigen-line production, haemolysin pattern or virulence for mice.

DAVIES, M. E. (1954). A study of the diffusible lipase produced by staphylococci and of its immunological activity. — *J. gen. Microbiol.* **11**, 37-44. [Author's summary modified.] 1241

D. found that staphylococci were the only potentially pathogenic bacterial group which produced a diffusible lipase detectable on solid culture medium. This lipase was obtained in filtrates of cultures grown by a conventional method for preparing staphylococcal toxins.

Whole cultures and culture filtrates of *albus* strains and formalized filtrates of *aureus* strains were found to stimulate the production of anti-lipolytic antibody in rabbit serum. Each antiserum prepared showed maximal neutralizing activity against the homologous filtrate, but all antisera studied neutralized heterologous filtrates to some extent. No evidence of naturally occurring anti-lipolytic antibody was found in any of the rabbit sera used.

LASMANIS, J. & SPENCER, G. R. (1954). Antibodies for hemolysins of *Micrococcus pyogenes* in whey and serum of dairy cattle.—*Amer. J. vet. Res.* **14**, 517-519. 1242

Out of 126 quarter milk samples from which coagulase-positive staphylococci had been isolated, 49 contained more than 2 I.U. of staphylococcus antitoxin per ml. of whey: 66 samples contained 0.1-1 and the remainder contained less than 0.5. In 207 quarter milk samples from which these organisms were not isolated, 152 contained less than 0.5, 42 contained 0.5-1, and the remainder contained more than 2. The serum of 17 out of 20 cows with staphylococcal mastitis contained more than 2, whereas the serum of 34 out of 44 apparently healthy cows contained less than 0.5. The antitoxin content of the milk was proportional to its pH, and the authors suggested that increased permeability of the mammary gland tissues may account for the presence of at least some of the antitoxin in the milk.—R.M.

FAIRBROTHER, R. W., PARKER, L. & EATON, B. R. (1954). The stability of penicillinase-producing strains of *Staphylococcus aureus*. — *J. gen. Microbiol.* **10**, 309-316. 1243

Out of 200 apparently resistant cultures of *Staph. aureus*, 6 gave both penicillin-sensitive and penicillin-resistant colonies, although they were of the same phage pattern.

—MALCOLM WOODBINE.

TACKING, R. (1954). Effect of penicillin on the pathogenicity of penicillinase-producing *Aureus staphylococci*. [Correspondence.]—*Nature, Lond.* **173**, 726-727. **1244**

Having previously shown that penicillin failed to protect rabbits from infection if non-pathogenic penicillinase-producing bacteria were in the infection site [V.B. **23**, 3176], T. examined the pathogenicity of penicillinase-producing *Staph. aureus*. When 12-hour culture was given s/c to 2-kg. rabbits in doses of 0.1-1 ml., the overall mortality of those treated with 30,000 units penicillin daily was 38%, compared with no fatalities in a control group of similarly infected rabbits. Rabbits treated with penicillin also lost more weight and had higher body temperatures than untreated infected rabbits. Thus treatment with penicillin may enhance the pathogenicity of penicillinase-producing organisms.

—MALCOLM WOODBINE.

ROGERS, H. J. (1954). The rate of formation of hyaluronidase, coagulase and total extracellular protein by strains of *Staphylococcus aureus*.—*J. gen. Microbiol.* **10**, 209-220. **1245**

The rate of increase, in both broth and casein hydrolysate, of hyaluronidase in growing cultures of *Staph. aureus* first accelerates and then becomes steady at a faster rate than the growth of the micro-organism. It both starts later and finishes earlier than the growth and is not due to adaptive response. Coagulase production also ceases before growth has ceased. These changes in enzymic activity are not associated directly with changes in formed protein or the secretion of extracellular protein.—MALCOLM WOODBINE.

HOWELL, D. G. (1954). Inhibitors to staphylococcal and streptococcal hyaluronidase in the serum of the dairy cow.—*J. Path. Bact.* **68**, 287-289. [Author's summary modified.] **1246**

H. detected an inhibitor to *Staphylococcus aureus* hyaluronidase in the serum of 55 out of 122 cows. It was thermostable and appeared to be a true antibody. In the serum of 3 of these cows tested 13 weeks after exposure to intramammary infection with *Streptococcus agalactiae*, an inhibitor to the hyaluronidase of this organism was also detected.

PULSFORD, M. F. (1954). Bovine mastitis in South Australia.—*Aust. vet. J.* **30**, 245-248. **1247**

Str. agalactiae mastitis was shown to be widespread in South Australia. Veterinarians in practice in some areas have exerted a

marked influence on the control of the disease, whereas, in other areas, free availability of penicillin to farmers in the absence of supervision has had little effect.—K. G. JOHNSTON.

GHOLSON, J. H. & HERMAN, H. A. (1953). Influence of environmental factors on *Streptococcus agalactiae* isolated from active cases of bovine mastitis.—*Res. Bull. Mo. agric. Exp. Sta.* No. 534, pp. 39. **1248**

Sodium acetate (0.1%) or mixed mono- and di-phosphates (0.1%) gave increased growth of *Str. agalactiae* *in vitro*, but *in vivo* the daily intramammary infusion of 50-100 ml. 0.24% sodium acetate into normal and infected quarters had no effect. Sodium citrate depressed growth; 4% lactose was the optimal carbohydrate. Wide zones of β -haemolysis occurred in strains of *Str. agalactiae* from acute mastitis, and toxic forms of Group B streptococci always consisted of short chains. Although enhanced virulence for mice was unrelated to toxicity for the bovine udder, variants, similar to those from mouse and rabbit passage, arose on continuous sub-culturing, and these lost β -haemolytic properties and Group B specificity.

—MALCOLM WOODBINE.

MURPHY, J. M. & STUART, O. M. (1954). The syringe collection of milk via teat-wall puncture as an aid in the study of artificial infection of the bovine mammary gland.—*Cornell Vet.* **44**, 501-511. [Authors' summary modified.] **1249**

The authors described a method for collecting milk aseptically through the wall of the teat. A slender, glass, 1 ml. hypodermic syringe, fitted with a $\frac{3}{8}$ -inch, 26-gauge hypodermic needle was used, and so arranged that the syringe could be operated with one hand. This method did not result in any disturbance of the gland other than minor haemorrhage at the site of puncture, and no infection resulted. In conjunction with the ordinary aseptic collection of foremilk, the method was applied to cows during exposure of the teat duct to *Str. agalactiae* by means of a swab technique. When infection did not follow exposure by this means, the test organism was never isolated from the milk drawn through the teat wall. On the other hand, when infection did occur the test organism was always isolated from the syringe milk. In the latter it was found that the inflammatory reaction only occurred after the test organism appeared within the teat cavity.

LIVONI, P. (1953). Continued experiments in collective action with a view to the eradication of mastitis caused by streptococci.—*Proc. XVth Int. vet. Congr., Stockholm*, 1953, Part I. Vol. 2, pp. 852-860. Discussion: Part II. pp. 349-352. [In English. French and German summaries.] 1250

An account of a campaign for the control of streptococcal mastitis in 700 herds of cattle on the island of Samsø, Denmark, the results of which have been reported previously [*V.B.* 24, 2599].—R.M.

HIGGINBOTTOM, C. & WHEATER, D. W. F. (1954). The incidence of *Streptococcus bovis* in cattle. — *J. agric. Sci.* 44, 434-442. [Authors' summary modified.] 1251

The number of *Str. bovis* in the rumen of a heifer and a steer, each having a permanent rumen fistula, remained relatively constant over a period of more than 3 years. It was little affected by the change in diet from stall-feeding (oats, beans, hay and straw) to grass or *vice versa*. There was a slight increase in the number of the organisms following each meal when the animals were stall-fed, but no appreciable variation in numbers throughout the day when the animals were at grass.

The authors isolated *Str. bovis* from the rumen of freshly slaughtered cattle and sheep from different parts of Great Britain, from the rumen of goats and calves and from the faeces of cattle, goats, and also in small numbers, together with *Str. equinus*, from horse dung. *Str. bovis* was found in the contents of the omasum, large intestine and caecum of three cattle, but in the small intestine of only one of these animals. Very small numbers of organisms were detected in the abomasal contents of 4 out of 12 cattle examined. They described the characteristics of the strains of *Str. bovis* isolated, including the synthesis of an iodophilic polysaccharide. They discussed the possible role of the organism in the decomposition of starch and other carbohydrates in the rumen.

AGRIMI, P. (1953). La streptococcosi dei suini. [Streptococcal infections in swine.] — *Zooprofilassi*, 8, 573-577. 1252

The author reported the occurrence of subacute streptococcal septicaemia in week-old piglets. The organism isolated resembled *Str. zooepidemicus* but "it was not possible" to type it serologically.—I. W. JENNINGS.

SHARP, J. T. (1954). L colonies from hemolytic streptococci: new technic in the study of L forms of bacteria. — *Proc. Soc. exp. Biol.*,

N.Y. 87, 94-97. [Author's summary modified.] 1253

The authors isolated L type colonies from streptococci following the combined effect of penicillin and various salts at concentrations higher than is normal in culture media. The appearance and morphology of these cultures are similar to those of L forms isolated from the alpha streptococci. They believe their technique may be helpful in the isolation of L forms of other bacterial species.

STEIN, C. D. (1954). Anthrax in livestock during 1953 and a review of data on incidence from 1945 to 1953. — *Vet. Med.* 49, 277-280. 1254

In 233 outbreaks of anthrax in livestock in the U.S.A. in 1953, cattle and pigs were chiefly affected and most cases were sporadic. Infected soil was shown to be the commonest single source of infection, contaminated feed being unimportant, but the source of over half the outbreaks was not discovered.

—M. B. HAWKSLEY.

CATELLANI, G. & CHELI, R. (1954). Il comportamento della formula leucocitaria nei processi tubercolari della specie bovina. [The blood leucocyte formula in TB. in cattle.] — *Riv. Med. vet., Parma*, 6, 25-36. [English, French and German summaries.] 1255

In blood samples from 50 cattle with pulmonary TB., eosinopenia, monocytosis, and increase in neutrophils were frequently observed, but none of these changes was sufficiently constant or characteristic for diagnostic purposes. [See also *V.B.* 22, 2716 & 24, 18].—R.M.

GRÄUB, E. (1954). Zwanzig Jahre Schutzimpfungsversuche gegen die Rindertuberkulose mit dem P-Stamm. [Twenty years of experiments on vaccination against bovine TB. with an avirulent strain of *M. tuberculosis* ("Strain P").] — *Schweiz. Arch. Tierheilk.* 96, 443-463. [English, French and Italian summaries.] 1256

G. immunized calves by means of a number of s/c inoculations with an attenuated bovine strain of tubercle bacillus which he described as "Strain P". Successive inoculations were always at new sites and close to lymph nodes. The calves were segregated for 4-5 weeks after the first inoculation. He recommended the method for the protection of calves in constant contact with infection, and particularly for farms where, for

financial reasons, destruction of all affected animals was not possible.—A.S.

SALCUNI, P. (1954). La tubercolosi ossea dei suini. [TB. of the bones in pigs.]—*Riv. Med. vet., Parma*, **6**, 115-132. [English and French summaries.] **1257**

C. described the pathology and histology of TB. of the lumbar vertebrae of a slaughtered pig. Bovine type tubercle bacilli were isolated from the lesions. He discussed pathogenesis and possible sources of infection.—R.M.

PULLAR, E. M. & RUSHFORD, B. H. (1954). The accuracy of the avian intradermal tuberculin test in pigs.]—*Aust. vet. J.* **30**, 221-231. **1258**

The efficiency of the intradermal test with avian type tuberculin was determined in a field trial on 511 pigs in herds naturally infected with the avian type tubercle bacillus. The incidence of infection was 6.3%. Maximum accuracy was obtained when the criterion for a positive reaction was taken as an increase in skin thickness of "more than 100%", or "more than 4 mm." The test was over 95.5% accurate. Of the pigs tested 1.7% were infected but gave little or no reaction; 2.4% of those tested, or one third of the reactors, had no visible lesions.

—K. G. JOHNSTON.

DIRKSON, G. (1954). Zur Augentuberkulose bei den Haustieren. (Augentuberkulose bei einer Katze.) [TB. of the eye in a cat.]—*Dtsch. tierärztl. Wschr.* **61**, 401-406. **1259**

A clinical account of TB. in the eye of a cat, with notes and photographs illustrating the morbid histology of the lesions.—A.S.

PEZZOLI, G. (1954). La tubercolosi del testicolo nel gatto. [TB. of the testicle in a cat.]—*Zooprofilassi*, **9**, 289-298. [English, French and German summaries.] **1260**

TB. of a testicle in a cat aged 3 years was accompanied by enlargement of the mesenteric lymph nodes.—R.M.

MACKANESS, G. B. (1954). The growth of tubercle bacilli in monocytes from normal and vaccinated rabbits.—*Amer. Rev. Tuberc.* **69**, 495-504. [French and Spanish summaries.] **1261**

When compared with monocytes from normal rabbits, those from rabbits vaccinated with tubercle bacilli of strains H37Rv or B.C.G. had no specific capacity to suppress the growth of virulent bovine or attenuated human types of tubercle bacilli resident within

them. Immune monocyte cultures died earlier than normal monocyte cultures.—A. ACKROYD.

LONG, D. A., MILES, A. A. & PERRY, W. L. M. (1954). The assay of tuberculin. — *Bull. World Hlth Org.* **10**, 989-1002. [French summary.] [Authors' synopsis modified.] **1262**

All types of tuberculin, crude and pure alike, have in the past been assayed by "matching" the skin reactions they produce in sensitized animals with those produced by the International Standard for Old Tuberculin; furthermore, various sensitizing antigens have been used. Such "matching" assays are not easy to analyse statistically. The authors described an assay based on the linear relationship between the diameter of the skin reaction and the logarithm of the dose of tuberculin. They demonstrated that this type of assay was precise, and that it eliminated the need for preliminary titrations. It provided information about the slope of the dosage-response lines, and yielded fiducial limits of error from the internal evidence of the assay. Using this method, they compared the effects of varying both sensitizing antigens and test allergens. There was sufficient heterogeneity among these different types of tuberculin to make invalid their comparison in terms of a single standard, namely, the International Standard for Old Tuberculin.

LONG, D. A. & SHEWELL, J. (1954). The influence of the thyroid gland on sensitivity to tuberculin in guinea-pigs.—*Brit. J. exp. Path.* **35**, 503-506. [Survey of paper: p. ii.] [Authors' summary modified.] **1263**

Using the response to the i/d inj. of tuberculin as a measure of allergic hypersensitivity in albino g. pigs sensitized with B.C.G., the authors found that:—(1) thyroxine increases sensitivity; (2) insulin increases sensitivity; (3) partial pancreatectomy has no effect on sensitivity but prevents the action of thyroxine in increasing sensitivity; (4) partial pancreatectomy does not prevent the increase in sensitivity that follows injection of insulin. They concluded that thyroxine increases sensitivity to tuberculin in g. pigs by increasing the amount of islet tissue and so inducing hyperinsulinism.

GIOVANARDI, A. & GROSSO, E. (1954). Esperienze di vaccinazione antitubercolare della cavia von B.C.G. e con anatubercolina I.P. [Vaccination of g. pigs against TB. with B.C.G. and with anatuberculin described by

Petragnani.]—*Boll. Ist. sieroter. Milan.* **33**, 23-44. [English summary.] 1264

A conventional account of the relative merits of B.C.G. and anatumerulin for the vaccination of g. pigs against TB.—I. MARTINI.

BROWNLEE, G. (1953). The wider aspects of the chemotherapy of tuberculosis. — *Pharmacol. Rev.* **5**, 421-450. 1265

E. gave a broad comprehensive review of the chemotherapy of TB. After tracing the origin of the tubercle and the nature and mode of action of the bacillus, he passed on to a detailed discussion of all aspects of chemotherapy, and described tests *in vivo* and *in vitro*, and screening techniques. He gave 174 references.—F. R. PAULSEN.

DESBORDES, J. & FOURNIER, E. (1954). Action des substances colorantes sur les mycobactéries. I. Colorants basiques. Étude de la cinétique de la réaction. [Action of stains on mycobacteria.]—*Ann. Inst. Pasteur.* **86**, 657-660. 1266

Using different strains of mycobacteria, including *M. tuberculosis* Strain H37Rv, 5 strains of B.C.G. of low virulence for g. pigs and various strains of *M. johnei* the amount of a basic stain taken up by the organisms was plotted against time.

Using 1% Nile blue at pH 11, virulent strains stained rapidly but less intensely and strains of low virulence stained either moderately, but slowly and progressively, or moderately and rapidly after a time-lag.

—M. B. HAWKSLEY.

BENITO-TRUJILLO, M. (1954). Une nouvelle espèce microbienne pathogène pour le mouton: *Corynebacterium toxinogenes*. [*Corynebacterium toxinogenes* n.s. a pathogen for sheep.]—*Ann. Inst. Pasteur.* **87**, 111-115. 1267

A pleomorphic diphtheroid isolated from abscesses in sheep was shown to be different from *C. ovis* and *C. pyogenes*, although it resembled the latter. It developed slowly in culture but growth was improved by serum. It was non-motile, aerobic, non-proteolytic and relatively inactive biochemically. It was pathogenic for g. pigs and mice and produced an exotoxin lethal to g. pigs but not mice.

—M. B. HAWKSLEY.

MIRAVET DE ISSALY, I. S. & ISSALY, A. S. (1950/53). Contribucion al estudio de la clasificacion de las pasteurellas. [Classification of *Pasteurella* spp.]—*Rev. Inst. bact., B. Aires.* **15**, 209-218. 1268

The authors investigated the fermentation

of *d* and *l* arabinose and *d* and *l* xylose by 58 strains of *Pasteurella*, and considered that activity with regard to these sugars might be useful in classifying the organisms.

This is one of several studies [V.B. **24**, 590 & 591] on the basis of which the authors intend to propose a new classification for *Pasteurella*.—A.S.

GIAMPORCARO, S. (1954). Contributo allo studio della salmonellosi canina. Indagini sierologiche su animali sani ed affetti dalle più comuni forme morbose. [Serological examination for *Salmonella* infection in dogs.]—*Clin. vet., Milano.* **77**, 97-101. [English summary.] 1269

Blood from 2 out of 8 healthy dogs, 6 out of 10 dogs with skin disease, and 5 out of 11 dogs with gastro-intestinal disease yielded positive agglutination reactions to one or both of *S. typhi-murium* and *S. enteritidis*.—R.M.

SMITH, H. WILLIAMS. (1954). The treatment of *Salmonella pullorum* infection in chicks with furazolidone, sulphamerazine and chloramphenicol.—*Vet. Rec.* **66**, 493-496. [Author's summary modified.] 1270

Furazolidone was superior to chloramphenicol and sulphamerazine in the treatment of *S. pullorum* infection in chicks. All three agents reduced the mortality associated with the disease, but carriers of the infection were much less common amongst chicks that had been treated with furazolidone than amongst those treated with either sulphamerazine or chloramphenicol. The dosage of furazolidone found to be most satisfactory was 0.04% in mash given continuously for 10-14 days; no chicks continued to excrete *S. pullorum* in their faeces after this course of treatment. Foci of *S. pullorum* infection in chicks that were chronic carriers were eliminated by furazolidone therapy.

TRBIĆ, B., MIHAJLOVIĆ, B. & ČALIĆ, Z. (1954). [Antigenic properties of strains of *Salmonella gallinarum* and *S. pullorum*.]—*Acta vet., Belgrade.* **4**, No. 2, pp. 35-39. [In Serbian. Abst. from English summary.] 1271

The authors studied the action of ammonium sulphate on the sedimentation of 15 strains of *S. pullorum* and 21 strains of *S. gallinarum*, using the method described by Williams [V.B. **24**, 42]. They found that 12 of the strains of *S. pullorum* were of the standard type, 2 were intermediate, and one was a variant: of the strains of *S. gallinarum*, only one strain was a variant and the remainder were standard.—R.M.

SMITH, H. WILLIAMS. (1954). Food as a vehicle of infection: the effect of variations in the diet on the induction of *Salmonella gallinarum* infection.—*Brit. J. exp. Path.* **35**, 447-458. [Survey of paper: p. i.] [Author's summary slightly modified.] **1272**

Different infection rates were observed when different foods containing similar numbers of *S. gallinarum* were fed to 9-week-old chickens. Certain properties of some of the foods had a profound influence on the bactericidal action of the gastric juice in the gizzard. One of these properties was physical consistency and another was the ability to maintain a relatively high pH in the gizzard.

LUKAS, G. N. & BRADFORD, D. R. (1954). Salmonellosis in turkey poults as observed in routine necropsy of 1,148 cases.—*J. Amer. vet. med. Ass.* **125**, 215-218. **1273**

Thirty species of *Salmonella* (apart from *S. gallinarum* and *S. pullorum*) were identified in 241 isolations, and *S. typhi-murium* comprised nearly one-third of all species obtained P.M., from 1,148 turkey poults. Of the total cases 54% were classified as uncomplicated infections.

Terramycin and aureomycin were the drugs of choice in controlling salmonellosis.

—M. B. HAWKSLEY.

CLARENBURG, A. (1953). *Salmonella bareilly* in poultry. Its relation to public health.—*Proc. XVth Int. vet. Congr., Stockholm*, 1953. Part I, Vol. 2, pp. 1175-1178. Discussion: Part II, pp. 418-419. [In English. French and German summaries.] **1274**

An account of the use of formaldehyde fumigation of incubators to prevent the spread of *S. bareilly* infection in chicks. [See also *V.B.* **23**, 2200.] The possibility of infection of human beings with *S. bareilly* from eggs was discussed.—R.M.

BOECKER, E., RICHTER, W. & WINZER, S. (1954). Über 532 in dem Salmonella-Laboratorium des Robert Koch-Instituts untersuchte Stämme der Salmonella-Gruppe. [Characteristics of 532 salmonella strains examined at the Robert Koch Institute, Berlin.] — *Zbl. Bakt. I. (Orig.)* **161**, 45-56. **1275**

An account of the isolation of 44 types of salmonella, among them two new types — *S. schoenberg* and *S. friedenau*, from 532 specimens submitted for examination. *S. pullorum* was isolated from a human being with enteritis.

—W. G. SILLER.

CLAPP, K. H. (1954). The incidence of *Brucella abortus bovis* infection in dairy cows in South Australia. — *Aust. vet. J.* **30**, 337-339. **1276**

Using serum and whey agglutination tests and the milk ring test, the authors found *Br. abortus* infection in cattle in South Australia to be widely spread. There was satisfactory agreement between serum and ring tests in the detection of animals proved to be infected by the demonstration of the bacilli from their tissues.

Tetrazolium stained ring test antigen proved more specific than antigen stained with haematoxylin.—K. G. JOHNSTON.

COLLIER, W. A. & KOMPROE, C. C. (1954). Serologische Brucella-untersuchungen bij slachtrunderen en slachtvarkens in Paramaribo. [Serological *Brucella* investigation in slaughter cattle and pigs in Paramaribo, Surinam.] — *Tijdschr. Diergeneesk.* **79**, 684-686. [English, French and German summaries.] **1277**

The serum of 76 out of 500 cattle and 26 out of 530 pigs contained agglutinins to both *Br. abortus* and *Br. melitensis*.

—C. A. VAN DORSSEN.

BERMAN, D. T. (1950). The natural course of bovine brucellosis.—*Proc. IIIrd Inter-Amer. Congr. Brucellosis*, Washington, 1950. pp. 104-114. [Spanish summary. Author's summary modified.] **1278**

Examination of the natural course of *Br. abortus* infection in cattle makes untenable the original concept that infection manifests itself as a placental disease, with little or no disturbance of health other than abortion. B. discussed work which showed that infection of cattle with brucella results in a generalized disease analogous to the disease in g. pigs, pigs and human beings. These findings should be taken into account in the interpretation of the results of vaccination, and in the establishment of control programmes. In defining the mechanisms of resistance, infection *per se* should not be confused with the placental disease.

GÜRÜN, H. M. (1952). *Brucella abortus* Bang'in dihydrostreptomycin ve sulphamezathin ile kombine tedavisi üzerinde araştırmalar. [Use of a combination of streptomycin and sulphadimidine for the treatment of *Brucella abortus* infection in cattle.] — *Thesis, Ankara*. pp. 92. [Abst. from English summary.] **1279**

An account of the treatment of *Br. abortus*

infection in 13 cattle with streptomycin administered by parenteral injection and sulphadimidine given by mouth. Cultures of the organism were obtained by biopsy from the liver and spleen of 4 out of 9 cattle after treatment. Biopsy was not done before treatment.

—R.M.

DE MELLO, M. T. (1950). **Animal brucellosis in Brazil.** — *Proc. IIIrd Inter-Amer. Congr. Brucellosis*, Washington, 1950. pp. 59-69. [Spanish summary.] **1280**

In almost all the States of Brazil, serological surveys have shown the presence of brucellosis in 10-20% of cattle and 30-40% of pigs. The disease is rare in goats. Human infection parallels the animal disease.

Some States had recently introduced measures for the control of the disease by periodic blood testing with elimination of reactors by sale rather than by destruction with compensation; this may result in the spread of the disease. The use of vaccination of calves may also restrict future control measures based on blood tests.—A. ACKROYD.

HUTCHINGS, L. M. (1950). **The natural course of swine brucellosis.** — *Proc. IIIrd Inter-Amer. Congr. Brucellosis*, Washington, 1950. pp. 115-121. [Spanish summary.] **1281**

Pigs harbour *Brucella abortus* and *Br. melitensis* as well as *Br. suis* and must be regarded as a potential source of spread. Both sexes and all ages are susceptible. Spread is primarily by animal to animal and secondarily by indirect means. The symptoms depend on the localization of the organism; this is commonly in lymphatic tissue or in the sex organs. The disease in pigs appears to be self-limiting so far as abortion and serum agglutination are concerned.—A. ACKROYD.

STILES, G. W. (1950). **Controlling brucellosis in Colorado goats.** — *Proc. IIIrd Inter-Amer. Congr. Brucellosis*, Washington, 1950. pp. 226-237. [Spanish summary.] **1282**

In Colorado in 1944, isolation of *Brucella melitensis* from g. pigs that had been injected with cheese prepared from unpasteurized goat's milk led to a programme of blood testing of herds which had to date involved 75,000 tests. All reactors were being destroyed and the owners compensated. This had resulted in a drop in the percentage of reactors from 8.31 to 1.52 by 1950, but for the eradication of brucellosis in goats frequent compulsory blood testing and good herd management are essential. No reactor may be imported into

Colorado and all milk and milk products must be pasteurized in approved plant.

—A. ACKROYD.

ORTENZI, R. (1953). Sul valore della prova di Renoux nella identificazione delle varie specie di *Brucella*. [Methods for identification of *Brucella* species.]—*Arch. Vet. Ital.* **4**, 415-422. [English, German and Spanish summaries.] **1283**

The author found that the sodium diethyl-carbamate test for the differentiation of *Brucella* described by Renoux [V.B. **22**, 3922] gave very pronounced inhibition of growth with *Br. suis* and lesser and different degrees of inhibition with *Br. melitensis* and *Br. abortus*. He stated that the method was highly reliable, the results being comparable with those obtained with Huddleson's bacteriostatic tests. [But see also V.B. **25**, 918.]—I. MARTINI.

ZAHARIJA, I. (1953). Die Ergebnisse unserer Forschungen über die Leptospirose bei den Haustieren in der Volksrepublik Kroatien. [The results of investigations into leptospira infection in domestic animals in Croatia.]—*Proc. XVth int. vet. Congr., Stockholm*, 1953. Part I. Vol. 1. pp. 3-8. Discussion: Part II. pp. 158-159. [In German. English and French summaries.] **1284**

An account of surveys of the incidence of *Leptospira* infection in horses, cattle, pigs, and dogs in Croatia, Yugoslavia. Some of the results have already been reported [V.B. **24**, 1414 & 2262]. The symptoms and course of the disease in the different animals were briefly discussed.—R.M.

RYLEY, J. W. & SIMMONS, G. C. (1954). **Leptospirosis of pigs. With special reference to birth of dead pigs and neo-natal mortality.**—*Aust. vet. J.* **30**, 203-208. **1285**

The authors stated that serological evidence suggests that porcine leptospirosis is widespread in Queensland. Two piggeries experiencing serious losses from stillbirths and neonatal mortality were investigated. In one piggery leptospira were recovered from 1 of 4 dead piglets examined, and 6 of 33 brood sows were shown to be excreting the organism. Serological examination of the sows revealed a high incidence of infection with *L. mitis* and a moderate incidence of *L. pomona*. In the other piggery, serological examination of the sows showed the reverse incidence.

A pregnant sow inoculated i/m with *L. pomona* began to excrete the organism 13 days later and continued to do so for at least 58 days after inoculation. Parturition took place

32 days after inoculation. Of 7 piglets dead at birth or which died soon after, 3 were shown to be infected with the organism.

—K. G. JOHNSTON.

SIPPEL, W. L. (1954). **Porcine leptospirosis.**—*Iowa Vet.* **25**, No. 6, pp. 18, 22, 24, 26, 28, 30, 34 & 36. **1286**

A brief review of the literature relating to infection in pigs with *Leptospira pomona*, *L. icterohaemorrhagiae* and *L. canicola*. Some experimental work was reported and suggestions were made as to diagnosis and treatment.

—M. B. HAWKSLEY.

KRÜGER, A. (1953). Eine einfache Schnellmethode für die Leptospiren-Agglutination. [A simple rapid method for leptospiral agglutination.]—*Z. Immunforsch.* **110**, 17-23. **1287**

An account of a microscope-slide agglutination test, using living leptospira culture mixed with serial dilutions of the serum under test.

The slides were examined by dark-field microscopy after 12-15 min. [This method is similar to that described by Gardner *V.B.* **17**, 2262.]—R.M.

KATITCH, R.-V. & DIMITRIJEVITCH, V. (1954). Résultats de recherches sur l'acquisition de l'immunité contre l'entérotoxémie chez des agneaux provenant de moutons vaccinés et non vaccinés. [Acquired immunity to enterotoxaemia in the lambs of vaccinated and unvaccinated ewes.]—*Rec. Méd. vét.* **130**, 488-496. **1288**

Lambs, from ewes which had been vaccinated against enterotoxaemia before lambing, with a vaccine prepared from *Clostridium welchii*, type C, developed higher serum titres of antitoxin after double vaccination at 4 and 7 weeks old, than did lambs similarly vaccinated, but from unvaccinated dams.—M. B. HAWKSLEY.

GORDON, J., TURNER, G. C. & DMOCHOWSKI, L. (1954). The inhibition of the alpha and theta toxins of *Clostridium welchii* by lecithin. —*J. Path. Bact.* **67**, 605-609. [Authors' summary slightly modified.] **1289**

The addition of 10% lecithin to α - and θ -toxins of *Cl. welchii* type A inhibits the haemolytic activity of both toxins. Lecithin in similar concentration inhibits the dermonecrotic activity of α -toxin. Ultracentrifugation at 147,500 gravity for 2 hours fails to restore either the haemolytic or the dermonecrotic activity of α -toxin. Application of similar centrifugal force to mixtures containing θ -toxin and 10% lecithin restores the haemolytic

activity of θ -toxin. These results indicate that *Cl. welchii* α - and θ -toxins are inhibited in different ways by lecithin.

HENZE, S. & OTTEN, E. (1953). Untersuchungen zur Ätiologie der Tonsillitis des Hundes. [Aetiology of tonsillitis in the dog.]—*Zbl. Bakt. I. (Orig.)* **159**, 339-342. **1290**

The authors found that tonsillitis in dogs is often accompanied by cardiac arrhythmia. *Cl. welchii* (Type A) was repeatedly isolated from natural cases. When 2 ml. of a 24-hour culture of the organism was applied, in healthy dogs, to tonsils which had previously been cooled, or superficially injured with a hypodermic needle, tonsillitis of a type resembling the natural disease described developed after 20 hours.—W. G. SILLER.

NIELSEN, N. E. (1953). Hesteserumshock hos to ungtyre efter tetanusprofylakse. [Horse-serum shock in two young bulls following prophylaxis against tetanus.]—*Medlemsbl. danske. Dyrlægeforen.* **36**, 431-432. **1291**

Two yearling bulls, half-brothers, developed serum shock after the injection of 6 ml. tetanus serum and one died. There was no record of any previous serum treatment.

—R. B. HOLCOMBE.

GALASSI, D. (1954). Sieroagglutinazione per il *Vibrio foetus*: prime osservazioni. [Serum agglutination tests for *V. fetus*.]—*Riv. Med. vet., Parma.* **6**, 75-80. [English, French and German summaries.] **1292**

Using an antigen prepared from 4 different strains of *V. fetus*, G. performed agglutination tests with some 2,000 sera from 694 uninfected cattle, 14 infected with *V. fetus*, and 1,300 cattle of unknown history. Positive titres from the 14 infected cattle were 1:200 in 2 of them, 1:400 in 6, and 1:800 in 3. G. considered that titres of 1:400 or more should be judged as positive, and 1:100 or less as negative.

—R.M.

RISTIC, M., MORSE, E. V., WIPF, L. & MC-NUTT, S. H. (1954). Transmission of experimental *Vibrio fetus* infection among guinea pigs and hamsters.—*Amer. J. vet. Res.* **15**, 309-313. **1293**

Ten g. pigs were infected intravaginally with *V. fetus*. Eight of them later became pregnant, and 2 aborted 32 and 38 days, respectively, after infection. The infection spread when these animals were placed with non-infected male and female g. pigs. *V. fetus* agglutination titres in the serum of infected females ranged from 1:10 to 1:40, but in infected males the titres were always very low

or absent. The organism was recovered from the testicles of 7 out of 10 g. pigs infected by i/p inoculation of culture 7–21 days previously. These animals infected female g. pigs by coitus.
—R.M.

STEWART, D. F. (1954). The treatment of contagious footrot in sheep by the topical application of chloromycetin.—*Aust. vet. J.* 30, 209–212. 1294

Laboratory and field experiments indicated that 10% chloramphenicol in propylene glycol, or in methylated spirits, is a highly efficient agent in the treatment of foot rot in sheep when used in conjunction with standard surgical exposure of affected tissues. In field trials 87% of 107 sheep were cured by one treatment.
—K. G. JOHNSTON.

STEWART, D. F. (1954). The treatment of contagious foot-rot in sheep—with particular reference to the value of chloromycetin.—*Aust. vet. J.* 30, 380–384. 1295

In a series of trials made by the Commonwealth Scientific and Industrial Research Organisation and the State Departments of Agriculture to test the efficiency of the topical application of 10% chloramphenicol in methylated spirits as a treatment for contagious foot rot of sheep, 92% of 745 affected feet were cured by one or two treatments while little success was obtained in control groups by paring alone. Similar results were obtained by the use of 5% formol in foot-baths each week for 4 weeks. S. emphasized the importance of treating the apparently healthy feet of affected sheep, by either of these methods. It was found advisable to repaint affected feet with the chloramphenicol solution 14 days later and to make at least one more examination 28 days after the initial inspection.

S. showed that *in vitro* the presence of faeces did not affect the bactericidal properties of 5% formol but that there was a graded depression of bactericidal action of 10% copper sulphate as the concentration of faeces increased.—L. E. A. SYMONS.

PRYOR, W. J. (1954). The treatment of contagious foot-rot in sheep.—*Aust. vet. J.* 30, 385–388. 1296

P. emphasized the importance of paring the hooves of affected sheep when dry and as free as possible from contamination by urine and faeces. He suggested routine practices for paring, and discussed the merits of formol, copper sulphate and arsenic solutions in foot baths. He emphasized the importance in an

eradication programme of re-inspection of hitherto clean flocks.

A short discussion on the problems of foot rot followed the paper.—L. E. A. SYMONS.

JENSEN, R., FLINT, J. C. & GRINER, L. A. (1954). Experimental hepatic necrobacillosis in beef cattle.—*Amer. J. vet. Res.* 15, 5–14. 1297

After intraportal inoculation of viable *Fusiformis necrophorus*, abscesses were found 1½–183 days later in the livers of 23 out of 33 cattle and 18 out of 20 sheep. No abscesses were found in 6 pigs so treated. Abscesses of 8–100 days' duration consisted of a centre of necrotic liver tissue which reached maximal size in 30 days and then gradually disappeared, a pus zone, and an outer fibrous connective tissue capsule. The duration of the abscesses varied, scars being observed in lesions of 45–183 days' standing. Intraperitoneal inoculations of polyvalent culture filtrates of *F. necrophorus* failed to protect sheep.

—A. ACKROYD.

I. CAMURRI, M. (1954). Influenza della neomicina sulla respirazione *in vitro* dello stafilococco aureo e del colibacillo. [Effect of neomycin on the respiration of *Staph. aureus* and *Bact. coli in vitro*.]—*Bol. Soc. ital. Biol. sper.* 30, 816–819. 1298

II. CAMURRI, M. (1954). Neomicina e glicolisi aerobia dell'*E. coli*. [Effect of neomycin on aerobic glycolysis by *Bact. coli*.]—*Ibid.* 819–821. 1299

I. The oxygen consumption of cultures of *Staph. aureus* or *Bact. coli* decreased rapidly when neomycin was added to cultures of these organisms at a conc. of 1–100 µg./ml., providing that the organisms were at the stage of multiplication. A conc. of 1 µg./ml. increased the O₂ consumption of a neomycin-resistant strain of *Bact. coli*, but higher concentrations inhibited it.

II. The production of CO₂ from glucose by *Bact. coli in vitro* was reduced in the presence of 10–100 µg./ml. neomycin.—R.M.

VOGEL, R. A., FETTER, B. F., CONANT, N. F. & LOWE, E. P. (1954). Preliminary studies on artificial active immunization of guinea pigs against respiratory challenge with *Coccidioides immitis*.—*Amer. Rev. Tuberc.* 70, 498–503. [French and Spanish summaries.] 1300

G. pigs, immunized by 5 intramuscular injections at weekly intervals of spherules of *C. immitis* (from cultures in the yolk sacs of embryonated hens' eggs) killed by heating at

60°C. for 30 min., developed a positive skin reaction to coccidioidin during the 4th week of treatment. Twenty-four such immunized animals and 24 untreated controls were exposed to a *C. immitis* aerosol (19×10^6 viable particles per 5,000 l.) for one hour. Of 12 animals of each group killed 6 weeks after exposure, 3 of the treated ones and 11 of the controls exhibited moderate to severe infection.

—G. C. AINSWORTH.

MCDIARMID, A. & AUSTWICK, P. K. C. (1954). Occurrence of *Haplosporangium parvum* in the lungs of the mole (*Talpa europaea*). [Correspondence.]—*Nature*, Lond. **174**, 843-844. **1301**

The observation of the occurrence of *Haplosporangium parvum* in the lungs of dead and dying and of apparently healthy moles in southern England is a new host record for this organism and the first European record of haplosporangiosis.—G. C. AINSWORTH.

ROBBINS, E. S. (1954). North American blastomycosis in the dog.—*J. Amer. vet. med. Ass.* **125**, 391-398. **1302**

R. discussed the incidence of *Blastomyces dermatitidis* infection in dogs in North America, and described 3 cases. He compared the course and characteristics of the infection in human beings and dogs. The lungs were the most common primary site of infection, and the skin was the next most common site.—R.M.

EVANS, W. E. D. & WINNER, H. I. (1954). The histogenesis of the lesions in experimental moniliasis in rabbits.—*J. Path. Bact.* **67**, 531-536. [Authors' summary modified.] **1303**

A strain of *Candida albicans* was injected i/v into rabbits and the resulting lesions were noted at varying intervals after infection. They included a hyaline thickening of the glomerular basement membrane and abscess-like lesions in other tissues and organs.

MATTHEAKIS, E. (1953). [Sporotrichosis in a mule.]—*Delt. Hellen. kten. Hetair.* **2**, 428-436. [In Greek. French summary.] **1304**

An account of the isolation of *Sporotrichum beurmanni* from a mule. A healthy mule was infected by i/p inoculation. A g. pig inoculated i/p developed orchitis.—T. T. VANTSIS.

FEY, H., HOLM, P. & TEUSCHER, E. (1954). Nocardiosen. Kasuistische Mitteilung über einen Fall von septischer Nocardiose beim Hund und zwei Fälle von Nocardia-Abortus beim Rind. [Nocardia infection in a dog and abortion in two cows.]—*Schweiz. Arch. Tierheilk.* **96**, 642-648. [English, French and

Italian summaries. Abst. from English summary.] **1305**

The authors described the cultural and morphological characters and the behaviour, in rabbits and g. pigs, of 3 strains of *Nocardia asteroides*, one of which was isolated from multiple abscesses with pleurisy and peritonitis in a dog, and the others from abortion in cattle. All were very sensitive to sulphathiazole, chloramphenicol and streptomycin, slightly sensitive to aureomycin and terramycin, and insensitive to penicillin, *in vitro*.

—G. C. AINSWORTH.

TURNER, A. W. (1954). Epidemiological characteristics of bovine contagious pleuropneumonia.—*Aust. vet. J.* **30**, 312-317. [Abst. from author's summary.] **1306**

T. outlined the main epidemiological characters of bovine contagious pleuro-pneumonia, with particular reference to conditions in Australia. He emphasized the role of chronic carriers with encapsulated lesions, of mild clinical cases and of subclinical cases with significant pulmonary lesions. In an experimental epidemiological study of the disease the main observations were: (a) a long latent period ("incubation period") of the disease in animals constantly kept in an infected herd, which ranged from 1-8 months, the mean period being 4 months; (b) the occurrence of transient complement-fixation reactions which might or might not ultimately be followed by development of the disease; (c) a high proportion of individuals naturally resistant to natural infection (25% of the animals) compared with a lower proportion (8%) naturally resistant to artificial infection with nebulized culture; and (d) a high proportion (45%) of very mild or inapparent infections.

MAHONEY, D. F. (1954). Some observations on the vaccination of calves with pleuro-pneumonia culture vaccine.—*Aust. vet. J.* **30**, 213-214. **1307**

Twenty-two calves whose ages ranged from three to seven months were vaccinated with Commonwealth Scientific and Industrial Research Organization bovine contagious pleuro-pneumonia culture vaccine in an effort to assess the efficiency of calfhood vaccination. Only in calves seven months of age did a significant serological response occur.

—K. G. JOHNSTON.

NELSON, J. B. (1954). The selective localization of murine pleuropneumonia-like organisms in the female genital tract on intraperitoneal in-

jection in mice.—*J. exp. Med.* **100**, 311-320.

[Author's summary slightly modified.] **1308**

Acute oophoritis and salpingitis were commonly observed in weanling mice injected i/p with murine pleuropneumonia-like organisms (PPLO) of the catarrhal type (4 strains). These organisms were regularly recovered in cultures from the ovary or uterus during the 3rd-5th week but not after the 12th week following inoculation. They were also obtained from the vagina during the 5th week and with varying results, depending on the strain, from the heart blood during the 1st week.

PPLO injected into the vagina survived for some weeks but did not migrate inwardly nor were they transmitted outwardly to exposed mice. In male mice peritoneal abscesses were sometimes present but the genital organs were normal and free from PPLO. Otitis media, with positive exudate cultures, occurred often in females and varied in rate with the strain of organism. PPLO of the conjunctival type failed to survive in the abdominal cavity of mice and produced no reaction in either the genital or the respiratory tract.

CARSON, J. R., EATON, R. D. & LUGINBUHL, R. E. (1954). The effect of injections of an oil suspension of terramycin on egg production and egg quality in hens affected with chronic respiratory disease.—*Poult. Sci.* **33**, 589-596. **1309**

In one of 2 lots of pullets in which "chronic respiratory disease" had persisted for 4 months, all birds (approx. 140) were inoculated s/c with 2 ml. of a suspension of terramycin hydrochloride. Symptoms of r les, sneezing and coughing disappeared from the treated birds within 7 days and their egg production improved markedly. In the untreated birds (approx. 130) the condition remained unchanged.

In a second experiment with similar numbers of treated birds and controls the authors studied shell thickness, albumin quality and weight of eggs. The treated birds laid eggs with thicker shells. Weight and albumin quality were not affected.—A.S.

SCHMITTLE, S. C. (1954). Use of dibenzylethylenediamine dipenicillin G and dihydrostreptomycin sulfate in chronic respiratory disease of chickens.—*J. Amer. vet. med. Ass.* **125**, 221-223. [Author's summary modified.] **1310**

The intramuscular administration of 0.5-1 ml. of a suspension containing, in each ml., 10,000 units of dibenzylethylenediamine dipenicillin G and 40 mg. dihydrostreptomycin

sulphate, produced favourable results in the treatment of "chronic respiratory disease" of fowls. After treatment mortality was reduced and food consumption increased. There was a tendency toward general improvement of the flocks, and a reduction in the number of culls. In table birds, the number of carcasses condemned at slaughter was reduced.

MORTON, H. E., LECCE, J. G., OSKAY, J. J. & COY, N. H. (1954). Electron microscope studies of pleuropneumonia-like organisms isolated from man and chickens.—*J. Bact.* **68**, 697-703. [Authors' summary modified.] **1311**

The authors used an electron microscope to study 6 strains of pleuropneumonia-like organisms (P.P.L.O.) isolated from man and 2 strains isolated from fowls. Cultures grown in liquid medium showed cells which were spheroidal to ellipsoidal in shape. Cultures grown on solid medium showed in addition to the coccoid forms seen in liquid media, a variety of bizarre forms varying from large circular masses to long filamentous forms. Such forms have been observed in electron micrographs of strains of P.P.L.O. from other animal species. The authors discussed possible explanations for these forms. No well differentiated rigid cell wall such as seen in bacteria was observed, no flagella were detected, and the organisms were readily destroyed upon contact with distilled water.

EDWARD, D. G. ff. & FITZGERALD, W. A. (1954). Inhibition of growth of pleuropneumonia-like organisms by antibody.—*J. Path. Bact.* **68**, 23-30. [Authors' summary copied verbatim.] **1312**

When antisera to organisms of the pleuropneumonia group were incorporated in culture media, growth of the homologous organism, and of other organisms shown by the agglutination reaction to be serologically related to it, was inhibited. Some sera inhibited growth even at a dilution of 1 in 1,000; complement was not required.

Growth of most of the ordinary bacteria was not similarly inhibited by antisera, but an antiserum prepared against the L-phase of *Proteus vulgaris* inhibited growth of the L-phase, though not the growth of the bacillary phase.

BLACK, W. G., SIMON, J., KIDDER, H. E. & WILTBANK, J. N. (1954). Bactericidal activity of the uterus in the rabbit and the cow.—*Amer. J. vet. Res.* **15**, 247-251. [Abst. from authors' summary.] **1313**

The authors compared the number of

Bact. coli recovered from the uterus of rabbits 24 hours after cultures of the organism had been introduced into the uterus. In oestrous and ovariectomized rabbits, the uterus possessed a high degree of bactericidal activity, but this activity was almost absent during pseudo-pregnancy.

Using the same method, they compared the bactericidal activity of the uterus of cows of normal and impaired fertility during the luteal phase of the oestrous cycle. The resistance to bacterial infection of the uterus of infertile cows was greater than that of cows of normal fertility.

MANN, S. O. & OXFORD, A. E. (1954). **Studies of some presumptive lactobacilli isolated from the rumens of young calves.**—*J. gen. Microbiol.* **11**, 83-90. [Authors' summary modified.] **1314**

Four out of 10 strains of Gram-positive organisms isolated from the rumen of young calves proved to be *Lactobacillus brevis*. Three strains from a very young calf were provisionally identified as an anaerobic variant of *L. lactis*. The remaining three strains obtained from a calf which had been given aureomycin could not be identified with any known species of *Lactobacillus*; these organisms produced a mixture of dextrorotatory and inactive lactic acid from glucose. The fermentation reactions of all the lactobacilli isolated in this study were clear-cut and reproducible.

VAN PELT, M. D., JOHNSON, R. E. & PLASTRIDGE, W. N. (1953). **Studies on the fecal flora of calves and its relation to calf scours.**—*Bull. Storrs agric. Exp. Sta.* No. 306. pp. 29. **1315**

The authors studied the aerobic faecal flora, the consistency of the faeces, and body temp. in 26 calves from birth to the 19th day. The faecal flora increased rapidly after birth and reached a max. in 24 hours, with a pre-

dominance of Gram-negative organisms. After this the ratio of Gram-negative organisms to the total count declined gradually, becoming constant at about the 14th day. Bacterial counts were significantly higher in 6 calves which were deprived of colostrum and fed skim milk, which led the authors to suggest that the function of colostrum was to limit the total bacterial content of the gut. Calves deprived of colostrum all developed scours and their stools remained at the transitional stage between meconium and normal stools, a stage through which normal calves pass in a few days.

—A.S.

BRYANT, M. P. & DOETSCH, R. N. (1954). **A study of actively cellulolytic rod-shaped bacteria of the bovine rumen.**—*J. Dairy Sci.* **37**, 1176-1183. [Authors' summary modified.] **1316**

Eight strains of anaerobic, Gram-negative, non-motile, actively cellulolytic, rod-shaped bacteria found in large numbers in rumen contents were selected for study on the basis of variation in morphology, and pigment production. Of many carbon sources tested, only glucose, cellobiose, cellulose, and pectin were fermented by all strains. Large amounts of succinic and acetic acids and smaller amounts of formic acid were produced, and carbon dioxide was taken up, in the fermentation of cellulose. The authors concluded that all the strains were *Bacteroides succinogenes* as described by Hungate [*V.B.* **21**, 45].

Studies on the growth requirements showed that bicarbonate was required, and indicated that rumen fluid contains an unknown factor, resistant to the action of heat, acids and alkalies. This factor was not a common B vitamin, amino-acid, peptide, purine, pyrimidine, or mineral, and was not detected in several materials commonly used to grow nutritionally fastidious bacteria, nor in extracts from lucerne meal or cattle faeces.

See also absts. 1463 (diseases of hares); 1464 (diseases of poultry); 1466 (aetiology of equine periodic ophthalmia); 1545 (urea method for bacterial viability counts); 1548 (report, Isle of Man); 1549 (report, Australia); 1550 (report, Asian regional conference on epizootics); 1551 (report, Republic of Ireland); 1552 (report, U.S.A.); 1553 (book, streptococci).

DISEASES CAUSED BY PROTOZOAN PARASITES

DU TOIT, R. (1954). **Trypanosomiasis in Zululand and the control of tsetse flies by chemical means.**—*Onderstepoort J. vet. Res.* **26**, 317-387. [Abst. from author's summary.] **1317**

The author described the distribution of trypanosomiasis in Africa and its importance as a limiting factor in the development of the livestock industry. He discussed the relationship between the tsetse fly belt within the

Union of South Africa and those occurring in Portuguese East Africa, emphasizing that while *Glossina pallidipes* occupies a dominant position in Zululand it is not found in the southern part of Portuguese East Africa.

Within Zululand workers have plotted the range of dispersion of *G. pallidipes*, *G. brevipalpis* and *G. austeni*, occupying approx. 7,000

sq. miles, and accurately determined the breeding areas.

He described the bionomics of the species of *Glossina* in Zululand and the dominant role of *G. pallidipes* in epizootics. He discussed the cyclical appearance of epizootics at intervals of approx. 10 years, and theories attempting to explain this phenomenon. He discussed methods of survey for establishing the relative densities of adult and immature flies, and their merits in providing a conception of the biotopes of the different species.

He described in detail the preliminary investigations and the methods finally adopted for the application of D.D.T. and benzene hexachloride, and the techniques employed for the eradication of *G. pallidipes* from the whole of Zululand, and *G. brevipalpis* from a localized area. He pointed out the value of bush clearing in the control of tsetse flies and outlined the manner in which it was used in Zululand. He compared costs for the procedures employed and drew attention to the potentialities of the methods which had been chosen in the light of experience.

He discussed possible applications of the methods used in Zululand to the eradication of at least some species of *Glossina* in other parts of Africa.

He pointed out that in view of insufficient knowledge regarding methods of survey the eradication of *G. austeni* requires further investigation. Its elimination from the Union would require international co-operation, as would also the elimination of *G. brevipalpis* on the border with Portuguese East Africa.

He considered the direct and indirect effects on the flora and fauna of the mass applications of insecticides to extensive areas of bush.

ROBSON, J. & WILDE, J. K. H. (1954). **Prophylaxis against trypanosomiasis in Zebu cattle—using antrycide and dimidium bromide.**—*Brit. vet. J.* **110**, 459-469. [Authors' conclusions modified.] **1318**

In both lightly and heavily infested tsetse country, antrycide and dimidium bromide used as prophylactics gave apparent protection, but the effect of antrycide lasted significantly longer than that of dimidium bromide. Antrycide (mixed salts) appeared to keep animals free from trypanosomes as seen from fortnightly blood and gland smear examinations for an average of 230 days, while dimidium bromide had the lower figure of 138 days. Control animals remained free for an average of 68 days.

When infections with drug-resistant trypanosomes were established in several animals it was found that trypanosomes resistant to antrycide were partially resistant to dimidium bromide, but that trypanosomes resistant to dimidium bromide were amenable to treatment with antrycide.

The authors showed that when the drug concentration in the blood is waning infection can occur and that in this case further treatment with the same drug is often followed by diminished protection with early relapse or re-infection.

WILSON, A. A. (1954). **Studies on ethidium bromide. IV. The toxicity of ethidium bromide for English cattle.**—*Brit. vet. J.* **110**, 233-237. [For previous parts, see *V.B.* **24**, 71 & **1053**; **25**, 953.] **1319**

Ten cows were given single subcutaneous injections of ethidium bromide in dosage range 1-10 mg./kg., corresponding to actual dosage of 0.5-5.6 g. The only sign of general toxicity appeared in one cow given the highest dose: it showed anorexia and lost weight for about one week, at 41 days after administration. Local toxicity however appeared in every cow, taking the form of considerable local tissue reaction at the injection site.

Some biochemical observations on the test cows were made, with reference to liver function as influenced by the drug. The findings were on the whole reassuring, especially in demonstrating a lower degree of toxicity of ethidium in comparison with dimidium bromide, which was administered to an additional pair of cows.

—J. EDWARDS.

STEPHENSON, J. & HUGHES, D. L. (1954). **Observations on the epizootiology of enterohepatitis (blackhead) in turkeys.**—*Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 282-284. [English and French summaries: pp. 56-57 of Summaries of Section Papers.] [Authors' summary modified.] **1320**

The authors studied the method of exposure to infection, the age of the poults, and the incubation period, as factors in the causation of *Histomonas meleagridis* infection. Data were obtained from a number of field experiments conducted over several years. Sharing ground with fowls was the greatest source of infection under natural conditions. Free ranging over ground on which infection had occurred previously was also hazardous, but close confinement on infected ground appeared to be less dangerous. There did not appear to

be any special susceptibility related to age, and there was no evidence of a resistance associated with age. Under natural conditions with infection taking place through embryonated eggs of *Heterakis* worms the incubation period was seldom less than 16 days.

LUND, E. E. (1954). **The effect of sulphaquinoxaline on the course of *Eimeria stiedae* infections in the domestic rabbit.**—*Exp. Parasit.* **3**, 497-503. [Author's summary modified.] 1321

The administration of 0.3% sulphaquinoxaline in the food provided effective control of *E. stiedae* infection in rabbits infected by mouth not more than 4 days before medication commenced. Liver lesions were present in rabbits infected 6-8 days before the start of medication, but fertile oocysts were not present in the faeces. Medication started 10 days or more after infection did not prevent liver lesions, but shortened the period over which fertile oocysts were present in the faeces; in the faeces of some rabbits no oocysts were present. The drug seemed to exert its greatest influence on the motile extracellular stages of the parasite.

WALETZKY, E., NEAL, R. & HABLE, I. (1954).

A field strain of *Eimeria tenella* resistant to sulfonamides.—*J. Parasit.* **40**, No. 5—Sect. 2, p. 24. [Only abstr. given. Abstr. from abstr.] 1322

A strain of *E. tenella* isolated from 3 affected birds in a Delaware broiler flock which failed to respond to conventional sulphaquinoxaline or sulphadimidine treatment for caecal coccidiosis was used to infect experimental chicks. In repeated lab. trials there was no response to drug-diets of 0.025 to 1.0% of sulphaquinoxaline; this strain was accordingly more than 40 times as resistant to the drug as ordinary strains of *E. tenella*. Surprisingly, increased resistance to other sulphonamides, which are also antagonized by *p*-amino-benzoic acid, was considerably less, e.g. about 5-fold to sulphadimidine. There was no increased resistance to a variety of other anticoccidial agents acting by other mechanisms, e.g. nitrophenide, nitrofurazone or arsenosobenzene. Studies on the life cycle, pathology and cross-immunity to a standard strain of *E. tenella* confirmed the species diagnosis.

POLS, J. W. (1954). **The artificial transmission of *Globidium besnoiti* Marotel, 1912, to cattle and rabbits.**—*J. S. Afr. vet. med. Ass.* **25**, No. 2, pp. 37-44. 1323

The transmission of *Globidium besnoiti* to cattle and rabbits by the injection of blood,

collected during the primary (febrile) stage of the disease, was successful. The disease was lethal to rabbits. Extra-cellular and intra-cellular trophozoites of *Globidium* closely resembling those of *Toxoplasma gondii* were demonstrable in blood smears.

—JAS. G. O'SULLIVAN.

PRICE, K. E., BROCK, W. E. & MILLER, J. G. (1954). **An evaluation of the complement-fixation test for anaplasmosis.**—*Amer. J. Vet. Res.* **15**, 511-516. 1324

Complement-fixation tests were carried out with sera from 278 cattle in 77 herds infected with *Anaplasma*, using antigen prepared by the method described by Price *et al.* [*V.B.* **23**, 89]. The authors compared the results obtained by the conventional visual method of reading the test with those obtained by using a spectrophotometer, with the object of being able to judge more accurately the degree of haemolysis. They found that the visual method was more accurate. The c.f. test was 96% accurate in detecting carriers of the disease.—R.M.

FLIR, K. (1954). **Akute Toxoplasmose beim Hund.** [Acute toxoplasmosis in a dog.]—*Mh. VetMed.* **9**, 197-202. 1325

F. recorded toxoplasmosis in an 11-month-old sheep dog, which died 8 days after initial symptoms of acute gastritis. Infection of the stomach, intestine and mesenteric lymph nodes was rapidly followed by invasion of, mainly, the liver, lungs and brain, in which there were proliferative as well as necrotic changes.

—M. L. CLARKE.

SCHULTE, F. (1954). **Toxoplasmose-Encephalitis beim Geflügel.** [Encephalitis caused by *Toxoplasma* in fowls and turkeys.]—*Dtsch. tierärztl. Wschr.* **61**, 481-484. 1326

S. recorded two outbreaks of toxoplasmosis involving 4 poults and 5 fowls, and described the histopathology of the condition. Its differential diagnosis from Newcastle disease depends upon the detection of typical cerebral pseudocysts.—M. L. CLARKE.

HEGEWALD. (1954). **Toxoplasmose—eine Berufskrankheit des praktischen Tierarztes?** [Toxoplasmosis—an occupational disease of the practising veterinary surgeon?]—*Prakt. Tierarzt.* No. 12, 317-318. 1327

H. described a case of toxoplasma conjunctivitis in an animal attendant working with dogs affected with a "distemper"-like syndrome. He emphasized the dangers of

toxoplasmosis to veterinarians and others and the necessity for a definite diagnosis of the disease.—E. J. L. SOULSBY.

EADIE, J. M. & OXFORD, A. E. (1954). A remarkable disintegrative effect of skatole upon certain rumen ciliate protozoa. [Correspondence.]—*Nature, Lond.* **174**, 973. **1328**

The rumen ciliates, *Isotricha* and *Dasytricha* and *Ophryoscolex*, isolated in a phosphate buffer, showed striking disintegration of the outer pellicles with disruption of the cell contents about 2 hours after saturation with indole or skatole.—M. L. CLARKE.

See also absts. 1549 (report, Australia); 1551 (report, Republic of Ireland).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

FRENKEL, H. S. (1954). Research on foot-and-mouth disease. VII. Cultivation of the virus on a practical scale in explantations of tongue epithelium. A modification of the culture technique.—*Amer. J. vet. Res.* **15**, 346-348. [Author's summary modified.] **1329**

F. found that, in the mass production of F. & M. disease virus *in vitro* from epithelial tissue of bovine tongue, fine mincing of the epithelial tissue was unnecessary. When long thin slices of tongue epithelium were used, the yield of virus was either as great or greater than when the tissue was finely minced. In addition, less labour was required and it was easier to maintain sterile conditions. He described a mechanical device whereby stirring of the tissue in a liquid medium was accomplished by a vertical rather than a rotating movement. [See also *V.B.* **23**, 2818].

PALACIOS GARCÍA, C. (1953). Cultivo *in vitro* (método Frenkel) del virus de la fiebre aftosa cepa Venezolana (Lara) tipo "O" Vallée y algunas observaciones durante la identificación del tipo inmunológico por fijación de complemento. [Cultivation *in vitro* of the Venezuelan strain of foot and mouth disease virus (type O).]—*Rev. Med. vet., Caracas*, **12**, 167-180. [English and German summaries.] **1330**

G. passaged a Venezuelan strain of F. & M. disease virus type O *in vitro*, using bovine epithelial tissue suspension.—A.S.

HECKLY, R. J. (1954). Electrophoretic studies of foot-and-mouth disease virus. — *Amer. J. vet. Res.* **15**, 252-254. [Author's summary modified.] **1331**

H. described a method for removing well-defined samples from a Tiselius-type electrophoresis cell. He found that the infective particles of F. & M. disease virus and the optically demonstrable component in purified preparations have similar electrophoretic properties between pH 7.0 and pH 8.6. The electrophoretic mobility of the virus at pH 7.0, 7.5, and 8.6 was approximately -4.6 , -6.0 , and -4.8×10^{-5} sq. cm./sec./volt, respectively.

RICE, C. E. & MCKERCHER, P. D. (1954). Studies of the complement fixation reaction in virus systems. VI. In vesicular stomatitis in horses, cattle, and swine.—*J. Immunol.* **73**, 309-317. [Authors' summary modified.] [For Part V, see *V.B.* **24**, 1083.] **1332**

Serum collected from horses, cattle, and pigs before and after inoculation with either the New Jersey or the Indiana strain of vesicular stomatitis virus, was examined by the c.f. test, using antigens prepared from the tissues of chick embryos infected with either of the two strains of virus. In horses, c.f. activity with homologous antigen appeared 6-8 days after infection, reached a maximum titre at the 10th-14th day, and began to decline after the 21st-18th day.

Serum from cattle convalescing from the disease did not at any time exhibit fixation in direct c.f. tests with homologous antigen. Non-complement-fixing antibody was demonstrated in the serum of these animals by an indirect c.f. method, using serum from hyperimmune g. pigs or convalescent horses to detect residual antigen. By these means the authors demonstrated that the development of antibody followed the same pattern as that observed in horses.

Serum from convalescent pigs showed marked increased haemolysis in the lower dilutions of serum. This was traced to certain substances present in the serum of normal and convalescent pigs, and was not due to the non-complement-fixing antibodies which were present in the serum of cattle. Natural haemolysins for sheep r.b.c. or possibly lipoids were apparently responsible for this phenomenon.

FONG, J. & MADIN, S. H. (1954). Stability of vesicular stomatitis virus at varying hydrogen ion concentrations. — *Proc. Soc. exp. Biol., N.Y.* **86**, 676-678. [Authors' summary modified.] **1333**

The authors confirmed the findings of Galloway and Elford (1937) concerning the instability of vesicular stomatitis virus at pH

values of 4.0 or less. The use of more sensitive experimental hosts (mice and chick embryos) and determination of 50% mortality endpoints, however, showed that inactivation of virus was achieved only at pH 2.0. Extension of studies beyond the pH value of 9.6 reported by Galloway and Elford revealed the striking resistance of virus to inactivation by alkaline environments. It would appear that the wide range of stability of the virus may render it a likely prospect for purification by means of the ion exchange resins.

IVÁNOVICS, G., ABRAHÁM, E. & KOCH, A. (1954). Über die Züchtung des Virus der Aujeszky-schen Krankheit in Hühnerembryonen-Gewebskulturen und seine Pathogenität für Hühner. [Cultivation of the virus of Aujeszky's disease in tissue culture, and its pathogenicity for fowls.] — *Zbl. Bakt. I. (Orig.)* **161**, 3-10. **1334**

Tissue cultures derived from chick embryos of various ages will support the growth of Aujeszky's disease virus, but will slightly alter its pathogenicity for mice. Cultures of post-embryonic chick tissue are no longer suitable, while live chicks 1-16 days old are as susceptible to the virus as albino mice.

—W. G. SILLER.

HARDJADIPARTA, R. J. & KURJANA, R. (1953). Beberapa pengalaman dalam gerakan pemberantasan penjakit andjing gila di Djakarta. [Mass vaccination of dogs in Indonesia against rabies.] — *Hemera zoa*, **60**, 345-359. [In Indonesian. Abst. from English summary.] **1335**

In the city of Djakarta, Indonesia, 4,000 dogs were inoculated with avianized rabies vaccine. During the following year, rabies was reported in 4 vaccinated dogs.—R.M.

ERCEGOVAC, D. (1954). Die Wertbestimmung des Wutschutimpfstoffes. [Evaluation of rabies vaccine.] — *Zbl. VetMed.* **1**, 445-454. [English, French and Spanish summaries.] **1336**

E. described a method for evaluating rabies vaccine by titrating antibodies produced by g. pigs. The antibody titre should be at least 1:200 fourteen days after the second injection, and the g. pigs should in addition be resistant to 40 M.L.D.₅₀ of street virus.—A.S.

NAGANO, Y., KOJIMA, Y. & SAWAI, Y. (1954). Immunité et interférence dans la vaccine. Inhibition de l'infection dermique par le virus inactivé. [Interference phenomenon in vaccinia infection.] — *C. R. Soc. Biol., Paris*, **148**, 750-752. **1337**

Experimental vaccinia infection of the skin

of a rabbit was inhibited by the injection at the same site, within 24 hours, of the homologous virus, inactivated by ultra-violet irradiation.—M. B. HAWKSLEY.

I. DEPOUX, R. & ISAACS, A. (1954). Interference between influenza and vaccinia viruses. — *Brit. J. exp. Path.* **35**, 415-418. **1338**

II. DEPOUX, R. & ISAACS, A. (1954). Effect of inhibitors on interference between influenza and vaccinia viruses.—*Ibid.* 419-425. [Abst. from survey of papers: p. i.] **1339**

I. The authors found that if influenza virus either untreated or inactivated by ultra-violet light is introduced into eggs one day (but not one hour) before inoculation with vaccinia virus the growth of the latter virus is much diminished. The same interfering effect was obtained in the rabbit skin when injection of vaccinia virus was preceded by injection of influenza virus at the same site one day earlier. No evidence of a reciprocal effect was obtained.

II. The authors reported the effects on the interference reaction already described [I. *supra*], and on the production of influenza soluble antigen, of introducing RDE (receptor-destroying enzyme) or influenza immune serum before or after inoculation with influenza virus.

BURNET, MACFARLANE. (1954). Virulence in animal viruses.—*Lancet*, **267**, 559-563. **1340**

In a preliminary discussion on the nature of virulence the author emphasized that this is a quality which can be defined only with reference to a given host and when it is known how long a standard infective dose takes to produce a standard lesion when inoculated by a given route. He discussed his work on influenza virus. This virus develops pathogenicity for the mouse lung after repeated intranasal passage, and by appropriate intranasal passage strains at various levels of virulence were obtained. With pure clones of these strains genetical experiments were carried out, to study recombinations of virulence and other characters in the daughter strains.—A.S.

ACKERMANN, W. W. & MAASSAB, H. F. (1954). Growth characteristics of influenza virus: the influence of a sulfonic acid.—*J. exp. Med.* **99**, 105-117. **1341**

The authors studied the normal growth of influenza virus on allantoic membrane *in vitro*, using small and large inocula, and compared it with growth in the presence of the inhibitor, α -amino-*p*-methoxy-phenyl methane sulphonic acid (AMPS) under the same conditions. Growth under these conditions was characterized by a shorter latent period than that in

growth in eggs. The release of virus from the membrane cells occurred over a period of many hours, and there was no evidence of a "burst" phenomenon such as that seen in bacterial cells lysed by bacteriophages. Apparently the release of virus was in no way associated with the destruction of cellular membranes.

They described an early stage in the development of the virus, at which it was sensitive to the action of AMPS, and attributed the prevention of viral growth by the drug to inhibition at this stage. When AMPS was introduced after the virus had developed beyond the sensitive stage growth continued, but the release of the virus from the tissues was inhibited.—A.S.

MILES, J. A. R. (1954). **Observations on complement fixation and complement fixation inhibition using certain avian sera.**—*Aust. J. exp. Biol. med. Sci.* **32**, 57-68. 1342

Using Murray Valley encephalitis virus in pigeons and Indian doves M. studied the development of complement-fixing antibodies and complement-fixation inhibiting antibodies. It was shown that in the presence of a mild antigenic stimulus inhibitory antibody only was produced. Following a more massive antigenic stimulus inhibiting antibody was first formed, followed by complement-fixing antibody, which again gave way to inhibiting antibody as the stimulus faded. Some light was thrown on these phenomena by examining mixed sera. Examination of a small number of other bird species led to the suggestion that this pattern of antibody response may be common in all birds, although in some species and individuals complement-fixing antibodies might never develop.—J. H. WHITEM.

CHU HSI-HUA. (1954). **Hemagglutination test for Japanese B encephalitis virus. A preliminary report.**—*Chin. med. J.* **72**, 210-214. [In English.] 1343

Using an antigen prepared from the brains of unweaned mice inoculated with Japanese B encephalitis virus, according to the method described by Casals & Brown [*V.B.* **23**, 3064], the author carried out haemagglutination and agglutination-inhibition tests, using r.b.c. from chicks and adult fowls. He found that r.b.c. from both sources gave good results, whereas Casals & Brown had insisted that chick r.b.c. were essential.—A.S.

BLACKMORE, J. S. & WINN, J. F. (1954). ***Aedes nigromaculis* (Ludlow), mosquito naturally infected with Western equine encephalomyelitis virus.**—*Proc. Soc. exp. Biol., N.Y.*

87, 328-329. [Authors' summary modified.] 1344

The authors reported the isolation of Western equine encephalitis (WEE) virus from a group of 20 *Aedes nigromaculis* mosquitoes taken by light trap in September, 1953, in Colorado. They had trapped 576 individuals of this species and divided them into 20 groups. Each group was crushed in horse serum-buffered saline and centrifuged to harvest possible virus material, and then injected into newly-hatched chicks. Only one of the groups contained WEE virus. This is the first report of the isolation of this virus from this species. The importance of this mosquito in the virus cycle is unknown.

GRUNDMANN, A. W. & LEYMASTER, G. R. (1954). **Equine encephalomyelitis in Utah. A survey of horses and man utilising serum-neutralization tests.**—*J. Amer. vet. med. Ass.* **124**, 40-42. 1345

Of 103 horses from various parts of Utah 46 had antibodies to Western equine encephalomyelitis. Antibodies were present in 24 out of the 42 horses born during or before the 1940 outbreak, and in 24 of the 61 born after the outbreak. Of 53 of the horses, tested for antibodies to St. Louis encephalitis, 6 were positive and a further 6 gave doubtful results. When serum samples from 15 persons with a clinical history of encephalitis were tested, only one contained antibodies.—A.S.

CHANOCK, R. M. & SABIN, A. B. (1954). **The hemagglutinin of Western equine encephalitis virus: recovery, properties and use for diagnosis.**—*J. Immunol.* **73**, 337-351. [Abst. from authors' summary.] 1346

The authors described the properties of a specific haemagglutinin for fowl r.b.c., recovered from 2 strains of Western equine encephalitis recently isolated from horses. It could not be recovered from the virus after 6 consecutive intracerebral passages in mice, nor from a laboratory strain of the virus. Its potency in the supernatant fluid of centrifuged brain suspension increased after storage for 1-7 days at 4°C. Used in the haemagglutination-inhibition test, the haemagglutinin gave positive results with serum from 7 human beings known to be infected with the virus, and negative results with serum from 4 human beings infected with St. Louis encephalitis virus.

DULBECCO, R. & VOGT, M. (1954). **One-step growth curve of Western equine encephalomyelitis virus on chicken embryo cells grown**

in vitro and analysis of virus yields from single cells.—*J. exp. Med.* **99**, 183-199. 1347

The authors determined the rate of growth of Western equine encephalomyelitis virus on monolayers of chick embryo cells, and suspensions of the same cells. The curves showed an initial exponential rise, reaching a maximal constant after 6-8 hours. The maximal virus yield per cell varied from 200-1,000 units on the cell layers, and 100-200 units in suspended cells.

They determined the yield of single infected cells, and after analysing the distribution of individual cell yields after various periods of virus growth, concluded that virus is released from an infected cell over a long period, and that one phase of the intracellular virus growth is exponential.—A.S.

SANMARTIN-BARBERI, C., GROOT, H. & OSORNO-MESA, E. (1954). **Human epidemic in Colombia caused by the Venezuelan equine encephalomyelitis virus.**—*Amer. J. trop. Med. Hyg.* **3**, 283-293. 1348

A note on an outbreak of Venezuelan equine encephalitis affecting about 70 persons. The epidemic started in March and began to decline in June: it disappeared entirely at the end of June when the district was thoroughly sprayed with D.D.T., but this may have been coincidental. Two mosquitoes, *Aedes aegypti* and *Culex fatigans* are possible vectors. When these mosquitoes were allowed to feed on infected mice and then, after 8 days, crushed and inoculated into other mice, the latter developed infection. The authors described the characters of the virus, clinical symptoms in man—in whom it produces a dengue-like fever—and the course of infection in a volunteer male subject.—A.S.

CORREIA FILHO, E. A. (1953). Surto de encefalomielite equina em Campo Grande—Mato Grosso. [**An outbreak of equine encephalomyelitis in cavalry horses and mules in Brazil.**]—*Rev. milit. rem. Vet.* **13**, 1-12. [English and French summaries.] 1349

The author described an outbreak of equine encephalomyelitis with symptoms of blindness, which killed 17 of a group of 152 horses. Of 60 mules living with the horses none was affected. Death occurred 3-12 hours after the onset of symptoms.—A.S.

KAO, K. Y. T., REAGAN, R. L. & BRUECKNER, A. L. (1954). **Electrophoretic study of the horse serum of equine infectious anaemia.**—*Amer. J. vet. Res.* **15**, 343-345. [Authors' summary modified.] 1350

The albumin/globulin ratio of the serum as determined by electrophoresis, decreased progressively in equine infectious anaemia as the disease proceeded from the acute to the chronic stage. This confirmed the work of Gilman [*V.B.* **22**, 3700]. During the acute stage of the disease, the decrease in the ratio was caused by a relative increase of gamma globulin; during the chronic stage the decrease was caused by an absolute increase in gamma globulin and a decrease of albumin. Calculation of the ratio by precipitation of serum with sodium sulphate gave different results to that calculated from the electrophoretic pattern.

KOPROWSKI, J. (1953). Poziom bilirubiny w przebiegu niedokrwistości zakaźnej koni. [**The bilirubin level in horses with equine infectious anaemia.**]—*Roczn. Nauk rol.* Ser. E. **66**, 47-83. [English and Russian summaries. Abst. from English summary.] 1351

In 46 normal horses the bilirubin content of the serum was directly proportional to the number of r.b.c., and ranged from 0.42-0.92 mg.%. In 340 horses with equine infectious anaemia the bilirubin content was inversely proportional to the number of r.b.c., and remained within normal limits except when the anaemia was severe, in which case a figure as high as 2.1 mg.% was recorded. The bilirubin level was of no value as a specific diagnostic test for the disease, but it was possible to exclude anaemia other than equine infectious by means of repeated determinations.—R.M.

RANDALL, C. C., TURNER, D. & DOLL, E. R. (1954). **The cultivation of equine abortion virus in cat tissue *in vitro*.**—*Amer. J. Path.* **30**, 1049-1055. [Authors' summary slightly modified.] 1352

Cat lung and spleen maintained *in vitro* supported the propagation of the virus of equine abortion through 16 serial passages. Characteristic intranuclear inclusions were observed in tissues from each passage. Cat tissue from the 15th passage, representing a dilution of the original inoculum of 1:10²³, caused mares to abort. The lesions in the foetuses were characteristic of the disease seen in horses.

BOLDRINI, G. (1954). Un episodio di peste bovina su una nave del "Lloyd Triestino". [**Rinderpest in buffaloes on a ship travelling from Mombasa to Trieste.**]—*Vet. ital.* **5**, 1182-1183. 1353

Two buffaloes consigned to Austria [presumably wild ones, for some zoological garden] were loaded at Mombasa, Kenya, on a Lloyd-Triestino boat bound for Trieste. On its way to

the Mediterranean the ship called at Mogadishu, Somalia, on the 10th September and loaded 300 cattle which were subsequently discharged at Suez [no further information is given about these cattle].

One of the two buffaloes died during the voyage and the carcass was disposed of at sea in the Adriatic. The other one on arrival at Trieste, on the 21st October, was sick. The Port veterinary officer in the course of his routine inspection on board, suspected rinderpest, and a veterinary inspector, expert in tropical diseases of animals, was immediately sent for from Rome to carry out investigations on the spot. The latter confirmed the diagnosis of rinderpest and the sick buffalo was immediately destroyed along with any material which could possibly have been contaminated. [It is not stated whether a P.M. examination was made so presumably the diagnosis was based on clinical signs.]

The interval between embarkation and the outbreak of infection was in excess of the period of incubation of rinderpest. The veterinary certificate from the British authorities at Mombasa was in order, and, in addition to the usual health clause, it stated that the animals had been in quarantine for 100 days before shipment.

The probable source of infection was the batch of 300 cattle loaded at Mogadishu and, in the circumstances, B. considers that the two buffaloes must have contracted the disease from contact with these animals coming from areas [in Somaliland] where rinderpest is known to be present.—T. E. GATT RUTTER.

I & II. **PIERCY, S. E. (1954). Studies in bovine malignant catarrh. IV. Immunity and vaccination. V. The role of sheep in the transmission of the disease.**—*Brit. vet. J.* **110**, 87-96 & 508-516. [Author's summaries slightly modified. For previous parts, see *V.B.* **22**, 2492, 3382; **23**, 1554.] **1354**

I. The immunity of animals recovered from naturally acquired or artificially induced bovine malignant catarrh persisted for periods of 4-8 months or even longer. On this basis, further attempts to elaborate an efficient vaccine seem justified. Formolized vaccines gave disappointing results when vaccinated animals were subjected to challenges at the laboratory but appeared to be successful in cutting short a severe outbreak in the field.

Attempts to demonstrate the presence of virus in the blood stream of recovered animals met with indifferent success but tended to support the view that virus may persist in the

bovine host for several months. It is stressed that this view merits further investigation, for its elucidation may explain the persistence of the disease in the absence of intermediate hosts.

II. P. described the history of a number of outbreaks of bovine malignant catarrh, believed to have been associated with the presence of sheep. On two farms, in a district where malignant catarrh was previously unknown, the disease occurred 10 and 8 months respectively after the introduction of sheep from an infected farm. On four different farms fresh cases of malignant catarrh ceased to occur for 2, 4, 8 and 16 weeks respectively after the removal of sheep. At Ngong, where malignant catarrh had been enzootic for many years, the removal of sheep in conjunction with the use of an experimental vaccine was followed by a reduction of fresh cases in the dairy herd from 39 in 1950 to one in 1951, and none in 1952.

Cattle confined in stalls with sheep from an infected farm, and with sheep which had been in continuous contact for 8 weeks with animals reacting to malignant catarrh at Kabete, remained healthy for periods up to 10 months. Cattle inoculated with blood and tissue suspensions taken from sheep which had been in prolonged contact with malignant catarrh remained healthy. The inoculation of sheep with infective bovine material was followed by an unidentified illness in a number of cases, but attempts to return the virus to oxen from such cases failed, although one steer appeared to gain a transient immunity.

DEBONERA, G. (1954). [A disease of goats in Greece due to a filtrable virus.]—Delt. Hellen. kten. Hetair. 2, 649-653. [In Greek. Abst. from French summary.] 1355

D. described an illness of goats in Greece characterized by fever and areas of painful subcutaneous oedema. A filtrable agent, visible in stained smears by light microscopy, was present in the blood and oedematous fluid of affected goats. He reproduced the disease by the inoculation of filtered or unfiltered oedematous fluid or culture. The morphology of the agent was similar in some respects to that of bovine contagious pleuro-pneumonia and to that of contagious agalactia of sheep and goats.—R.M.

HALL, O. (1953). Garbage feeding control in Canada.—Proc. 56th Ann. Meet. U.S. live Stk sanit. Ass. pp. 209-213. 1356

A discussion on the transmission of swine fever by means of uncooked swill, based on

outbreaks that occurred in Canada during 1903-1912.—R.M.

SCHINDLER, R. (1954). Untersuchungen über den Beginn der Resistenz gegen Staupe nach Impfung mit dem modifizierten eiadaptierten Staupevirus. [*Investigation into the commencement of resistance to distemper after inoculation with modified egg-adapted distemper virus.*]—*Vet.-med Nachr. Bayer-Meister Lucius*, No. 3, 136-142. [Summaries in Suppl. No. 3/1954. English summary: p. 4; French summary: p. 13; Spanish summary: p. 22.] **1357**

A comparative study on 16 dogs and 10 ferrets (with 5 control dogs) showed that immunity to canine distemper was developed in the ferrets two days after vaccination with modified egg-adapted virus. In the dogs too it developed in a short, but more variable period.—W. G. SILLER.

FERRI, A. G. (1952). *Hepatitis contagiosa canis* em São Paulo. [*Hepatitis contagiosa canis in São Paulo.*]—*Rev. Fac. Med. vet. S. Paulo*, 4, 573-583. [English summary and conclusions.] **1358**

F. reported the existence of canine virus hepatitis in Brazil for the first time. He recorded 3 cases. All showed the typical gross and microscopic changes of the disease. Inclusion bodies were demonstrated in the liver, spleen, kidney and in one case in the endothelial cells of the c.n.s.—I. W. JENNINGS.

THOMPSON, H. V. (1954). *Myxomatosis: recent developments.*—*Agriculture, Lond.* 61, 317-321. **1359**

T. described the spread of myxomatosis in Great Britain since the initial outbreak in Edenbridge, Kent, in October, 1953. Until May, 1954, the disease was restricted to the south-eastern counties, but in summer the spread was very rapid, and by August 255 outbreaks had been reported from 61 counties.

He discussed mosquitoes and the common European rabbit flea as vectors. The latter had been incriminated, and its agency alone would explain the observed slow spread of the disease within a locality. It could not however be held responsible for the rapid and uneven dispersal that has characterized the disease in Britain, even if it were taken into consideration that carrier birds can carry infected fleas over considerable distances. In this connexion there seemed little doubt that intentional spread of the disease by human agency had been important.

In Kent in summer domestic rabbits kept in cages at a height of 5 feet did not contract the disease, though the wild rabbits were heavily infected, and from this, and other evidence from rabbit-mosquito ecology it was concluded that mosquitoes, although abundant, were not feeding on the rabbits.

The fact that mosquitoes had not so far been important as vectors in Britain did not however mean that they were incapable of playing an important role. Experience in Australia had shown that the governing factor there was the extent to which the climate favoured the mosquitoes concerned.

The virus had not so far shown any signs of attenuation in G. Britain.—A.S.

KÖTSCHKE, W. (1954). Beitrag zur pathologischen Histologie der Myxomatose. [*Pathological histology of myxomatosis.*]—*Dtsch. tierärztl. Wschr.* 61, 466-468. **1360**

A homogeneous metachromatic substance containing numerous specific, small, multipolar myxoma cells is found, along with hyalinization of the smaller vessels, in lymphatic tissue, in the testes and the heart of myxomatous rabbits. Non-specific changes occur in the lungs, adrenal glands, liver and in the female genital organs.—W. G. SILLER.

KILHAM, L. & DALMAT, H. T. (1954). *Host-virus-mosquito relations of Shope's fibromas in cottontail rabbits.*—*J. Parasit.* 40, No. 5—Sect. 2, pp. 40-41. [Only abst. given. Abst. slightly modified.] **1361**

Fibroma virus was transmitted as readily to cottontail rabbits by the bite of *Anopheles quadrimaculatus*, *Culex pipiens*, and *Aedes triseriatus* as by the bite of *A. aegypti*, following which fibromas similar in appearance to those of natural occurrence are produced on the feet and legs of the host. A young cottontail, inoculated when a month old, had fibromas which were still infective for *A. aegypti* 10 months later and which contained a high concentration of virus a year after inoculation. A wild cottontail had naturally acquired fibromas which remained infective for mosquitoes from December to April, suggesting that cottontails could serve as effective reservoirs of infection.

No fibromas developed from the bites of *A. aegypti* when the mouthparts were previously treated with a suspension of virulent fibroma virus. There was no evidence that this virus could persist on the exteriors of these mosquitoes as suggested by the "flying pin" theory of other investigators. Likewise, virus

could not be recovered from the bodies of mosquitoes that had been inoculated with a suspension of fibroma and defibrinated g. pig blood. On the contrary, tumours were produced by inoculating into rabbits a suspension of heads of mosquitoes that had previously fed on the same virus-blood preparation.

By inoculating into test rabbits pooled mosquito heads, thoraces, and abdomens at various intervals after the mosquitoes had fed on cottontail fibromas, it was shown that considerable virus remained in the mosquito for at least 5 weeks, and that it was localized entirely in the head parts. Mosquitoes that had fed on cottontail fibromas were able to produce tumours upon 5 repeated feedings from 1 to 18 days after their initial infective meal with no striking reduction of virus content. Only a 10-fold diminution of titre was noted as compared with controls which were tested for virus titre on the first day.

Since mosquitoes feeding on cottontail fibromas imbibe neutralizing antibodies with blood meals and have no virus in their salivary glands, virus-mosquito relations are different from those encountered in yellow fever and the virus encephalitides. The authors discussed evidence for and against a biological cycle of fibroma virus in the mosquito.

BELLER, K. (1953). Über Geflügelpest. [Fowl plague and Newcastle disease.]—*Proc. XVth Int. vet. Congr., Stockholm, 1953*. Part I. Vol. 1. pp. 243-246. Discussion: Part II. pp. 213-217. In German. English and French summaries.] 1362

B.'s paper, as published in part I of the *Proceedings*, has already been abstracted [V.B. 24, 1899]. In part II he discussed his paper and illustrated the results of the haemagglutination-inhibition test using strains of fowl plague and Newcastle disease viruses. R. Daubney disputed B.'s conclusion that the two viruses were antigenically related.—R.M.

SINHA, S. K., HANSON, R. P. & BRANDLY, C. A. (1954). Aërosol transmission of Newcastle disease in chickens.—*Amer. J. vet. Res.* 15, 287-292. 1363

The authors infected 16 fowls with Newcastle disease by exposing them to the virus in aerosol form. Three to six days after infection 25 l. air was pumped from each of the cages of the fowls and was passed through filter paper, gelatin sponge, or allantoic fluid from chick embryos. Twenty-six out of 128 chick embryos died after inoculation with aqueous extracts of the filter paper, the gelatin sponge,

or the allantoic fluid, and Newcastle disease virus was directly recovered from 5 of them. The virus was also recovered from 68 out of 104 embryos inoculated with material from 10 of the dead embryos.—R.M.

GRAUSGRUBER, W. & STÖCKL, W. (1954). Vergleichende Untersuchungen über Hämagglutinationshemmung, γ -Globulingehalt und Immunität nach Impfung mit Geflügelpest-Adsorbatvakzine. [Haemagglutination-inhibition, γ -globulin content and immunity following immunization with adsorbate Newcastle disease vaccine.]—*Arch. exp. VetMed.* 8, 404-415. 1364

The haemagglutination inhibition titre rose in 24 healthy and 7 pullorum positive fowls from 2^{-2} before vaccination to 2^{-7} in old and 2^{-6} in young birds, 20 days after vaccination with Newcastle disease adsorbate vaccine. In healthy birds the titre fell to about normal in 6 weeks, but it remained above 2^{-2} for three months in *S. pullorum* infected birds. The concentration of serum γ -globulins ran parallel to the H.I. titre and reached 13.8% in old birds and 8.7% in young ones. In *S. pullorum* infected birds this increase was dependent on the pullorum antibody titre.

The H.I. titre rose rapidly to 2^{-12} upon challenge with virulent N.D. virus, but the concentration of γ -globulins was not much affected.—W. G. SILLER.

I. BONADUCE, A. (1954). Ricerche sulla sensibilità del cane all'infravirus della pseudo- peste aviare. [Research on the susceptibility of dogs to the virus of Newcastle disease.]—*Nuova Vet.* 30, 255-262. 1365

II. ORLANDELLA, V. (1954). Ricerche sulla sensibilità del gatto all'infravirus della pseudo- peste aviare. [Research on the susceptibility of cats to the virus of Newcastle disease.]—*Ibid.* 262-265. 1366

I. B. was unable to infect 3 dogs with Newcastle disease virus by the subcutaneous, intravenous or oral routes. Instillation of infective material into the conjunctiva of 2 dogs resulted in acute conjunctivitis, but the virus was not recovered from, and antibodies were not present in, the blood. Inoculation of virus into the anterior chamber of the eye caused glaucoma, and antibodies were detected in the blood 20 days after infection, but the virus was not recovered from the blood.

II. The author was unable to infect 5 cats with Newcastle disease virus by the subcutaneous, intracardial, intracerebral, or oral routes. Antibodies were present in the serum

20 days after subcutaneous, intracardial, and intracerebral inoculation.—R.M.

VAN VLOTEN, J. G. C. (1954). Ornithosis bij duiven. [Psittacosis in pigeons.]—*Tijdschr. Diergeneesk.* **79**, 695-704. [English, French and German summaries.] **1367**

Complement-fixation tests for psittacosis on the serum of pigeons during 1950-53 revealed 316 reactors (6.9%) in 1950; 375 (6.3%) reactors in 1951; 509 (11.9%) reactors in 1952; and 306 (11.2%) reactors in 1953.

—C. A. VAN DORSSEN.

HADDOW, A. J. (1954). East Africa High Commission. Virus Research Institute, Entebbe. Annual report No. 4, 1953. pp. 23. Nairobi: Govt. Printer. **1368**

The finding of protective antibodies to West Nile virus in cattle led to speculation on the possibility of WNV being the cause of an obscure fatal disease of cattle at Iriri Quarantine camp. Investigations proved negative. The relationship between viruses and mosquitoes was being studied at Entebbe using Rift Valley fever virus and *Aedes aegypticus*.

—T. E. GATT RUTTER.

MITCHELL, C. A., WALKER, R. V. L. & BANNISTER, G. L. (1954). Persistence of neutralizing antibody in milk and blood of cows and goats following the instillation of virus into the mammary gland.—*Canad. J. comp. Med.* **18**, 426-430. **1369**

Propagation of Newcastle disease and influenza A(PR8) viruses in the mammary gland of cattle resulted in the formation of neutralizing antibody for at least 18 months. Free virus disappeared from the milk in 2 weeks or less. The same two viruses in the mammary gland of goats produced neutralizing antibody for at least 8 months.—R. GWATKIN.

SANDERS, M., KIEM, I. & LAGUNOFF, D. (1953). Cultivation of viruses: a critical review.—*Arch. Path. (lab. med.)* **56**, 148-225. **1370**

The authors gave a comprehensive review of progress in the techniques of virus cultivation. They defined the standards for cultivation, which distinguish between growth and mere survival in culture, and discussed materials and methods. They outlined the present theories of virus multiplication, and the application of culture techniques to individual viruses, giving details for 57 viruses, of which

many were of veterinary interest. There was an extensive bibliography.—A.S.

VAN ROOYEN, C. E. (1954). A revision of Holmes's classification of animal viruses, Suborder III (Zoophagineae).—*Canad. J. Microbiol.* **1**, 227-248. **1371**

The author proposed the revision of Holmes' Suborder III by the creation of 4 new families, 8 new genera, 31 new species and 16 new combinations, and 9 new subspecies. He gave a list of these. Viruses are amenable to orderly arrangement and classification and the several types may be satisfactorily named.

—R. GWATKIN.

FORBES, B. R. V., KEAST, J. C. & WANNAN, J. S. (1954). A serological survey of cattle in New South Wales for Q fever infection: a preliminary report.—*Aust. vet. J.* **30**, 266-268. [Abst. from authors' summary.] **1372**

The authors carried out c.f. tests for Q fever on sera from 700 cattle in dairying and cattle-breeding districts of New South Wales. There were no positive reactions to these tests.

STOENNER, H. G. (1953). Observations on the epizootiology of bovine Q fever.—*Proc. XVth Int. vet. Congr., Stockholm, 1953*. Part I. Vol. 1. 290-295. Part II. p. 228. [In English, French and German summaries.] **1373**

S. described work carried out in the U.S.A. on natural and experimental infection of cattle with *Rickettsia burneti*. [See also *V.B.* **19**, 2684; **20**, 2578; **23**, 452 & 1269].—R.M.

PRICE, W. H., JOHNSON, J. W., EMERSON, H. & PRESTON, C. E. (1954). Rickettsial-interference phenomenon: a new protective mechanism.—*Science*. **120**, 457-459. **1374**

The authors studied interference between a virulent rickettsia, inactivated by ultra-violet light before inoculation i/p in g. pigs, and a challenge dose of the same rickettsia, untreated and fully virulent, inoculated by the same route 3 hours later. The interference, which varied with the doses used, was measured by the duration of fever produced, by the scrotal reaction, and by fatality.

In a general discussion of the mechanism of interference between rickettsia the authors emphasized that any hypothesis must take into account (i) that the protection afforded depends on the ratio of the interfering dose to the challenge dose, and not on the number of host cells; (ii) that host inflammatory response is

not of great importance in this phenomenon, and (iii) that the virulent challenge organisms are found in the same organs and tissues, and to the same extent, in untreated animals and

in those previously given an interfering inoculation. The only difference is that there is much less multiplication of the challenge virus in the latter.—A.S.

See also absts. 1239 (bacteriophage typing of staphylococci); 1549 (report, Australia); 1550 (report, Asian regional conference on epizootics).

IMMUNITY

WILSON, M. W. & PRINGLE, B. H. (1954). **Experimental studies of the agar-plate precipitin test of Ouchterlony.**—*J. Immunol.* **73**, 232-243. [Abst. from authors' summary.] 1375

The authors studied the agar-plate precipitin test described by Ouchterlony [*V.B.* **24**, 129 & 130] in order to evaluate the effects of the following factors:—initial concentration of agar, size of Petri dish, initial NaCl concentration of agar, pH of agar, temperature of incubation, absolute and relative concentrations of antigen and antibody, and discontinuous diffusion. They found that precipitin reactions in liquid media did not provide reliable information as to the optimum concentrations of antigen and anti-body in the agar-plate test. They discussed other findings.

HALE, W. M. & STONER, R. D. (1954). **Effects of ionizing radiation on immunity.**—*Radiation Res.* **1**, 459-469. [Authors' summary modified.] 1376

The authors found that ionizing whole body radiation markedly reduced or abolished active or passive immunity to bacterial infections, and reduced resistance and active immunity to *Trichinella* infestation. Such radiation had little, if any, effect on acquired immunity to viral infection, and did not significantly depress active or passive immunity to bacterial toxins. Antibody formation was greatly inhibited by radiation. They considered that there was no evidence that small doses of radiation stimulated antibody production.

NELSON, R. A., JR. (1953). **The immune-adherence phenomenon. An immunologically specific reaction between micro-organisms and erythrocytes leading to enhanced phagocytosis.**—*Science.* **118**, 733-737. 1377

The immune adherence phenomenon was investigated with *Treponema pallidum* and *Streptococcus pneumoniae*. It was demonstrated that the reaction was specific for homologous antiserum, that it required complement and the presence of human erythrocytes.

Str. pneumoniae adhering to erythrocytes were more readily phagocytosed, thus indicating that erythrocytes can play a role in immunological reactions. —E. J. L. SOULSBY.

BENACERRAF, B., BIOZZI, G. & HALPERN, B. N. (1954). **The effect of histamine upon the local fixation of antibodies in the skin of the guinea pig.**—*J. Immunol.* **73**, 318-321. [Authors' summary modified.] 1378

The latent period of sensitization of passive cutaneous anaphylaxis of the g. pig was inversely proportional to the amount of antibody injected i/v to sensitize the animal. The i/d injection of very small doses of histamine or the local application of mild irritants, could bring about the appearance of the reaction of passive cutaneous anaphylaxis at the treated site; small doses of histamine or other mild inflammatory agents are therefore able to bring about the local fixation of circulating antibody.

COOMBS, R. R. A. & FISET, M. L. (1954). **Detection of complete and incomplete antibodies to egg albumin by means of a sheep red cell-egg albumin antigen unit.**—*Brit. J. exp. Path.* **35**, 472-477. [Survey of paper: p. i.] [Authors' summary slightly modified.] 1379

Complete antibodies (precipitating or agglutinating) and incomplete antibodies (non-precipitating or non-agglutinating) to egg albumin in human sera may be detected and differentiated the one from the other by reaction with a sheep red cell-egg albumin antigen unit. Such a unit is constructed by exposing sheep red cells to a rabbit Forssman non-agglutinating antibody which has previously been coupled by chemical means with egg albumin.

PINKUS, H., ALBERT, S. & JOHNSON, R. M. (1954). **The uptake of radioactive phosphorus by mouse lymph nodes during sensitization to a foreign protein.**—*J. Immunol.* **73**, 278-285. [Authors' summary modified.] 1380

The authors studied changes in weight, histology, and uptake of radio-active phosphorus in the lymph nodes of mice, and correlated these findings with precipitin titres in the blood serum following two s/c injections of horse serum, the second injection being given 35 days after the first. They concluded that the uptake of phosphorus by lymph nodes was closely related to the immunological reaction of the animal.

HUMBLE, R. J. (1954). **Blood types in cattle.**—*Canad. J. comp. Med.* **18**, 379-389. **1381**

At least 95 factors have been identified in the blood of the bovine species. This paper dealt with the inheritance of antigenic factors, the preparation of reagents for blood typing, the technique of the blood typing test and the uses of bovine blood typing.—R. GWATKIN.

BARRICK, E. R., MATRONE, G. & OSBORNE, J. C. (1954). **Effects of administering various blood serum constituents on gamma globulin levels of baby pigs.**—*Proc. Soc. exp. Biol., N.Y.* **87**, 92-94. **1382**

When porcine γ -globulin, porcine and bovine serum solids and cows' colostrum were fed to day-old piglets no marked or consistent change occurred in the serum γ -globulin level. The parenteral administration of porcine γ -globulin, however, caused a response which approached that produced by colostrum in unweaned pigs. The authors tried unsuccessfully to effect the absorption of whole porcine γ -globulin and bovine serum solids by feeding them together with trypsin inhibitor.—A.S.

BOULANGER, P. (1954). **A preliminary note on a method of inactivating a substance or substances in swine serum that interfere with the detection of antibodies by the complement-fixation test.**—*Canad. J. comp. Med.* **18**, 423-425. **1383**

The pH of the serum is reduced to 4.4 or 4.2. After standing for 18 hours at 9°C. the serum is neutralized and inactivated at 56°C. for 30 min. Such treated sera can then be tested by the usual type of direct complement-fixation test.—R. GWATKIN.

POLANI, P. E. (1954). **Experimental haemolytic anaemia in the albino rat: hepatic aspects.**—*J. Path. Bact.* **67**, 431-440. [Author's summary slightly modified.] **1384**

In the liver of the albino rat made anaemic with haemolytic serum, necrotic lesions were common 24-48 hours after injection; repair took place quickly and no cirrhotic

changes were observed. The changes were proportional to the dose of haemolytic serum, were not influenced by age or sex, and followed a pattern related to time. No necrosis occurred in the liver of similar rats made anoxic by exposure to low oxygen tension or in which haemolysis had been produced by the injection of phenylhydrazine. P. suggested that hepatic necrosis after injection of haemolytic serum is due to a direct effect of the antibody of the hepatic cells, the products of haemolysis possibly acting as a contributory factor. He discussed these lesions in relation to haemolytic disease of the new-born.

RIEK, R. F. (1955). **Studies on allergic dermatitis (Queensland itch) of the horse: the origin and significance of histamine in the blood and its distribution in the tissues.**—*Aust. J. agric. Res.* **6**, 161-170. **1385**

In horses that were non-susceptible to allergic dermatitis (Queensland itch) there was no difference in the histamine content of the circulating blood between summer and winter. In susceptible horses there was a rise in histamine in summer. The increase in histamine in the plasma was much greater than in the white cell layer. The histamine taken up by the eosinophiles is regarded as bound to the cells and inactive, while the plasma histamine is free and is responsible for the cellular reactions in the skin and the irritation seen in the early stages of the disease.

Plasma histamine is rapidly detoxified and it is believed that the eosinophile cell is concerned with the neutralization process which may be in the nature of conjugation of histamine with the protein of the cell, thus permitting the carriage of histamine to the centres of detoxification or excretion.

Examination of tissues obtained during summer from 8 susceptible and 8 non-susceptible horses revealed higher values for histamine in the liver and skin of the susceptible animals, but the differences were not statistically significant owing to marked variation between horses.—H. McL. GORDON.

See also *absts.* **1290** (diffuse antigens and virulence of *Staph. aureus*); **1241** (diffusible lipase of staphylococci); **1242** (antibodies for *Staph. pyogenes* in whey); **1246** (staphylococcal and streptococcal hyaluronidase in cattle serum); **1256-1264** (T.B.); **1271** (antigenic properties of strains of *S. pullorum* and *S. gallinarum*); **1287** (leptospirosis); **1288** (ovine enterotoxaemia); **1291** (shock in bulls from tetanus serum); **1300** (*C. immitis*); **1307** (pleuro-pneumonia vaccine); **1312** (inhibition of growth of pleuro-pneumonia-like organisms by antibody); **1324** (anaplasmosis); **1332** (vesicular stomatitis); **1335-1336** (rabies); **1342** (complement fixation and complement fixation inhibition); **1343** (Japanese B encephalitis); **1345-1347** (Western equine encephalomyelitis); **1350** (electrophoretic study of E.I.A. serum); **1354** (bovine malignant catarrh); **1357** (distemper); **1364** (Newcastle disease); **1374** (ricketsial interference phenomenon); **1399** (trichinella); **1549** reports, Australia).

PARASITES IN RELATION TO DISEASE [GENERAL]

HORTON-SMITH, C. & LONG, P. L. (1954). **Preliminary observations on the physical conditions of built-up litter and their possible effects on the parasitic populations.** — *Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 266-272. [English and French summaries: pp. 53-54 of Summaries of Section Papers.] [Authors' summary modified.] **1386**

The authors confined their observations to one type of deep litter in a converted cattle byre, and emphasized that studies of other types of deep litter in other types of houses still require to be made. They recorded temperature, moisture-content and ammonia concentration in the litter which had been used by fowls for some time, and studied the effects of temp. and ammonia on the free-living stages of

coccidia and helminths. Although ammonia is of considerable importance in controlling the numbers of viable oocysts, the conc. attained in litter was not sufficiently high to reduce the helminth population. The heat generated in heaped-up litter was capable of destroying oocysts and helminth ova. In built-up litter, even when there was high ammonia conc. at the bottom of the pile, large numbers of viable oocysts were present. Activities of the fowls on the litter complicated the subject, because infective stages of parasites were frequently removed from an environment with a high ammonia content before the ammonia had time to kill them. Forking the litter may either reduce the ammonia conc. within its substance, or serve to turn in the infected surface of the litter to the bottom where most ammonia is produced.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

FULLER, H. S. (1954). **Experimental epidemiology in relation to arthropod-borne disease.** — *J. econ. Ent.* **47**, 420-429. **1387**

A general discussion on the relationship between pathogen, vector, and host and their effect on the epidemiology of arthropod-borne disease. F. discussed the significance, and the limitations, of experimental work in this field. He listed 50 references.—D. W. JOLLY.

HARRIS, A. N. (1954). **Sheep dips and dipping.** — *Agric. Gaz. N.S.W.* **65**, 475-479, 522-523 & 549-552. **1388**

A general article giving details of dip con-

struction and dipping methods, for the control of the biting louse *Damalinea ovis*, the sheep ked *Melophagus ovinus* and the sheep itch mite *Psorergates ovis*.—M. D. MURRAY.

WILSON, S. G. (1954). ***Rhipicephalus hurti* n. sp. (Ixodidae) from Kenya game and domestic animals.** — *Parasitology*. **44**, 277-284. [Author's summary modified.] **1389**

W. described a new species of tick, *R. hurti*, obtained from game animals from the Rift Valley of Kenya. He compared it with *R. capensis*, *R. serranoi* and *R. jeanneli*.

See also absts. **1317** (control of tsetse flies); **1344** (natural infection of mosquitoes with Western equine encephalomyelitis); **1361** (host-virus-mosquito relations of Shope's fibroma); **1549** (report, Australia); **1551** (report, Republic of Ireland).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

DAWES, B. (1954). **Maintenance in vitro of *Fasciola hepatica*.** [Correspondence.] — *Nature, Lond.* **174**, 654-655. **1390**

Livers from animals infested with *F. hepatica* were collected while warm, and kept in insulated containers, until dissected under aseptic conditions. The flukes were extracted, and placed in sterile tubes containing 25 ml. of filtered Hedon-Fleig solution, to which a drop of phenol red had been added to indicate the alkalinity. The tubes were then incubated at 37°C., with changes into fresh sterile tubes as desired. By this method, the flukes were maintained in an active state for 12-16 days. —D. W. JOLLY.

MACKIE, A. & CUTLER, A. A. (1954). **Preparation of phenothiazine derivatives as possible anthelmintics.** — *J. chem. Soc.* July. pp. 2577-2579. **1391**

The authors found that 10-aryl derivatives of phenothiazine and β -10 phenothiazinyl propionic acid killed *Fasciola hepatica* in vitro, whereas the sodium salt of the latter only paralysed the flukes.—E.G.

DINNIK, J. A. & DINNIK, N. N. (1954). **The life cycle of *Paramphistomum microbothrium* Fischöder, 1901 (Trematoda, Paramphistomidae).** — *Parasitology*. **44**, 285-299. [Authors' summary modified.] **1392**

The authors studied the life cycle of *P.*

microbothrium in cattle in Kenya. Under laboratory conditions, the eggs hatched into miracidia in 14–16 days at a temp. of 26° to 28°C. In the snail, *Bulinus alluaudi*, kept at a temp. of 18° to 20°C., the miracidium developed into a sporocyst, the elongated body of which, containing young rediae, reached a length of 3.6 mm. in about 2 weeks.

The first rediae emerged from a sporocyst on the 14th day, and on the 20th day the first-generation rediae began to produce second-generation rediae. From the 28th–58th day the first-generation parent rediae ceased to produce daughter rediae and began to develop cercariae only.

Cercariae began to emerge from the first-generation rediae 30 days after exposure of the snail to miracidia. The cercariae left the parent rediae in a very immature state and further development occurred in the liver of the snail. They began to emerge from the infected snail 13 days later, attached themselves to vegetation, and encysted.

As a result of successive generations of rediae, infected snails were continually shedding cercariae as long as they lived. In the laboratory experiments the life span of some of the infected snails exceeded a year. In cattle, *P. microbothrium* reached maturity and eggs appeared in the faeces about 100 days after encysted cercariae were fed to the animals.

DURIE, P. H. (1955). A technique for the collection of large numbers of paramphistome (Trematoda) metacercariae.—*Aust. J. agric. Res.* 6, 200–202. 1393

D. described a technique for the collection of large numbers of paramphistome metacercariae; it is based on the attraction of the cercariae to an illuminated, yellow surface.

VRAŽIĆ, O. & RICHTER, S. (1954). Prilog entoparasitskoj fauni naše domaće guske. [Helminth parasites of geese in Yugoslavia].—*Vet. Arhiv.* 24, 15–17. [In Croat. English and German summaries. Abst. from English summary.] 1394

Massive infestation with the trematode *Paramonostomum alveatum* was noted in the large intestine of 2 out of 18 geese. A trematode of the genus *Hyphiasmus* [species undetermined] was found in the infraorbital sinus of 10 out of 26 geese. *Prosthogonimus cuneatus* was found in the cloacal bursa of one bird.

—R.M.

BOKO, F. (1952). *Echinococcus granulosus* kod sarajevskih pasa. [*E. granulosus* in dogs at Sarajevo].—*Rad. poljopriv.-sum. fak., Sara-*

jevo. 1, 35–40. [In Croat. Abst. from English summary.] 1395

E. granulosus was found at P.M. examination in 16 out of 100 stray dogs caught in Sarajevo.—R.M.

SOMMERVILLE, R. I. (1954). The second ecdysis of infective nematode larvae. [Correspondence].—*Nature, Lond.* 174, 751–752. 1396

The infective larvae of sheep nematodes were observed to exsheath in that portion of the intestine which immediately precedes the normal adult habitat. The abomasal worms exsheathed in the rumen, intestinal worms in the abomasum. The larvae of *Strongyloides papillosus*, which enter the host through the skin, died if retained in the rumen for more than 30 min. S. described the technique by which these observations were made.

—D. W. JOLLY.

SPEDDING, C. R. W. (1954). Production of worm-free lambs at pasture. [Correspondence].—*Nature, Lond.* 174, 611. 1397

Fifteen lambs were kept virtually worm free by being pastured on a newly sown ley, which had been cultivated for the preceding two years. The lambs were folded when 24 hours old, with their dams, and moved to a fresh area of grazing every two days. Regular faecal egg counts revealed that 12 of the lambs were worm free at 15 weeks, apart from a slight infestation with *Trichuris ovis* and *Strongyloides papillosus*. The presence of other strongyles was detected in the other three lambs.—D. W. JOLLY.

EHRENFORD, F. A. (1954). A new effective anthelmintic for canine *Trichuris*.—*J. Parasit.* 40, 481. 1398

The compound 3-methyl-1-pentyn-3-yl sodium phthalate was effective in removing trichurids from 67–89% of dogs at an oral dosage rate of 125–200 mg./kg. body wt. This anthelmintic efficiency was assessed from faecal examination, and actual worm counts on P.M. examination. The acute oral LD₅₀ of the compound could not be determined because it caused vomiting at doses of 750 mg. per kg. and over.—D. W. JOLLY.

LARSH, J. E., JR. & RACE, G. J. (1954). A histopathologic study of the anterior small intestine of immunized and nonimmunized mice infected with *Trichinella spiralis*.—*J. infect. Dis.* 94, 262–272. 1399

The reaction of the intestinal wall to the presence of *T. spiralis* was studied in immune and non-immune mice. A more rapid and in-

tense inflammation was observed in the immune mice. Although both groups of mice received the same dose of larvae, the worms in the immune mice were less numerous, and examination indicated that their development was retarded, and fertility impaired. The authors suggested that these effects on the worms were due to the combined action of specific antibodies, and the inflammatory reaction.

—D. W. JOLLY.

YUTUC, L. M. (1954). **The incidence and prepatent period of *Ancylostoma caninum* and *Toxocara canis* in prenatally infected puppies.**

—*J. Parasit.* **40**, No. 5—Sect. 2, pp. 18-19.

[Only abst given. Abst. from abst.] 1400

Of 81 puppies belonging to 17 litters, 62 harboured both *A. caninum* and *T. canis*, 15 had pure infestation with *T. canis* and 4 with *A. caninum*. The prepatent period of *A. caninum* ranged from 16 to 29 days with an average of 20.10 days. With *T. canis* the range of the prepatent period was 21 to 30 days with an av. of 24.8 days.

PARNELL, I. W. (1954). **The sequence and the levels of the helminth infestations in Scottish hill sheep.**—*Brit. vet. J.* **110**, 499-507. 1401

P. gave a synopsis of the outstanding work on helminth infestations of Scottish Hill sheep and discussed the phenomena of the seasonal variations in egg counts, worm burdens and larvae and the factors influencing these.

It is of note that species of *Ostertagia* are the first pathogens to infest hill lambs and that the intestinal species of *Trichostrongylus* are important in winter hogs.—E. J. L. SOULSBY.

WHITE, E. G. (1955). **The eggs of *Hyostrongylus rubidus* Hall, 1921. A stomach worm of the pig, and their recognition in pig faeces.**—*Brit. vet. J.* **111**, 11-15. [Author's summary modified.] 1402

Since the original description of *H. rubidus* by Hassall & Stiles in 1892 many authors have continued to quote the size of the eggs as $45 \times 36\mu$. W. stated that the eggs measure about $70 \times 35\mu$ and cannot be distinguished microscopically in pig faeces from those of *Oesophagostomum dentatum*, though the two species are easily distinguished in faecal culture by their characteristic third stage infective larvae. He found *H. strongylus* larvae in faecal culture in 30 of 53 samples of pig faeces from 10 of 14 farms in different parts of Britain. He considered that the error in size, which he took to be a misprint, may have led many observers to fail to find the eggs in pig faeces.

GRIFFITHS, H. J., LEARY, R. M. & FENSTER-MACHER, R. (1954). **A new record for gape-worm (*Cyathostoma bronchialis*) infection of domestic geese in North America.**—*Amer. J. vet. Res.* **15**, 298-299. [Abst. from authors' summary.] 1403

C. bronchialis appeared to be primarily responsible for extensive losses among the goslings of a flock. The morbidity in the outbreak was about 80% with a mortality of about 20%. This worm had been reported previously from local wild geese, and the authors suggested that the infestation was introduced by such wild birds.

KENNEDY, P. C. (1954). **The migrations of the larvae of *Ascaris lumbricoides* in cattle and their relation to eosinophilic granulomas.**—*Cornell Vet.* **44**, 531-565. [Author's summary modified.] 1404

The larvae of *A. lumbricoides*, are capable of migrating in cattle exposed to infective-stage larvae either naturally or experimentally. Evidence of larval migration was found in liver and lung, from which K. concluded that the migratory pattern of *A. lumbricoides* in cattle was the same as that described in human beings, lab. animals, and pigs. No grossly visible lesions were produced in the livers of calves by the migrating larvae from an initial exposure. The lesions in the liver and lungs were small and of mechanical type (haemorrhages and necrosis). A state of sensitivity was induced in calves by the migration of *A. lumbricoides* larvae. This sensitization was recognized by the development of grossly visible lesions and of an eosinophilia in the animals subjected to subsequent exposures. The gross and microscopic features of the lesions produced experimentally in sensitized cattle were similar in all respects to the naturally occurring disease in cattle and to those described in Löffler's syndrome in man [eosinophilia and cellular infiltration of the lungs.]

ELLIOTT, A. (1954). **Relationship of aging, food reserves, and infectivity of larvae of *Ascaridia galli*.**—*Exp. Parasit.* **3**, 307-320. 1405

E. infected susceptible chicks with embryonated eggs of *A. galli* from cultures of eggs of different ages. The average number of adult worms recovered from the chicks was greater when young cultures of eggs were used than when old cultures were used. Cultures of eggs were highly infective until 200 days old. Between 200 and 290 days there was a rapid decline in infectivity, and cultures more than a year old were only occasionally infective.

The fat content of larvae of *A. galli* decreased as the larvae grew older. Exhaustion of fat from larvae liberated from old cultures of eggs appeared to be correlated with loss of infectivity. The recovery of larvae from cultures more than a year old may be explained by their retaining some fat, in spite of their age.—R.M.

HANSEN, M. F., OLSON, L. J. & ACKERT, J. E. (1954). Improved techniques for culturing and administering ascarid eggs to experimental chicks.—*Exp. Parasit.* **3**, 464-473. 1406

The authors concluded that the results obtained by feeding chicks aged 2 weeks with eggs of *Ascaridia galli* suspended in a 1.25 M solution of cane sugar were more uniform than those obtained by feeding worm-eggs suspended in water. This was because the eggs remained in suspension for a much longer time in that sugar solution than in water, and, consequently, the number of eggs per dose was relatively constant when sugar solution was employed.—R.M.

SOFRENOVIĆ, D., ŠIBALIĆ, S. & CVETKOVIĆ, L. (1953). [*Spirura rytipleurites* in the oesophagus of a cat.].—*Acta vet., Belgrade*. **3**, 165-170. [In Serbian. Abst. from English summary.] 1407

The normal site of the nematode *S. rytipleurites* is the stomach and intestines of cats, dogs, foxes and rats. The authors found large numbers of this parasite attached to the wall of the oesophagus of a cat, without any apparent effect on the cat's health.—R.M.

NIELSEN, L. B. (1954). Canine filariasis in Canada. Report of a case.—*Canad. J. comp. Med.* **18**, 370-372. 1408

A report of *Dirofilaria immitis* infestation in a Canadian-born dog. The source was believed to be 2 dogs imported from Illinois by the owner 2 years previously.—R. GWATKIN.

KUME, S. & ITAGAKI, S. (1955). On the life-cycle of *Dirofilaria immitis* in the dog as the final host.—*Brit. vet. J.* **111**, 16-24. [Authors' summary modified.] 1409

The development of the Filariidae in their final hosts remains obscure, and even in the case of *D. immitis* very little is known of the development of the parasite from the time it is transmitted percutaneously to the dog by the bite of the mosquito, when it is only about 1.0 mm. in length, until it is found in the heart and pulmonary artery where it is normally more than 5.0 cm. long.

After unsuccessful attempts to solve the problem by examining naturally infested dogs

the authors made observations on dogs artificially infested with hundreds of infective larvae. In the experimental dogs it was possible to find a large number of young worms in the subcutaneous tissue, adipose tissue, subserosa and muscles. These tissues served as intermediate locations before migration to the right ventricle of the heart occurred. The parasites in these locations were generally very small.

Having determined the intermediate locations the authors investigated three possible routes of migration from the point of entry into the host to these locations: it was found that the infective larvae do not migrate through the veins or through the lymphatic system but penetrate through the tissues, to the intermediate locations.

Four possible routes of migration from the intermediate locations to the right ventricle of the heart were investigated. There seemed to be no migration *via* the thorax and the lungs, *via* the buccal cavity, larynx, trachea, bronchi and pulmonary artery nor *via* the lymphatic system, but there was evidence of migration *via* the veins between 85 and 120 days after dosage, at which stage the parasites measured between 3.2 and 11.0 cm.

NEVENIĆ, V. (1953). Helminti pasa na teritoriji pojedinih mesta narodnih Republika Makedonije, Srbije i Crne Gore. [*Helminth parasites of dogs in some towns in Yugoslavia.*].—*Vet. Glasn.* **7**, 235-241. [In Croat. Abst. from French summary.] 1410

N. described the helminth parasites of 580 dogs from 10 different districts of Yugoslavia, as determined by P.M. examination. The following were present in dogs in all districts:—*Echinococcus granulosus*, *Taenia hydatigena*, *Dipylidium caninum*, *Mesocostoides lineatus*, *Uncinaria stenocephala*, *Toxocara canis*, and *Spirocerca sanguinolenta*.—R.M.

MORIYA, S. (1954). The reliability of the current diagnostic methods for the identification of helminth eggs.—*Parasitology*. **44**, 300-303. [Author's summary modified.] 1411

When concentration methods were not used, M. found that it was necessary to repeat the faecal examination 3 times for the eggs of *Ascaris lumbricoides*, 7 times for those of hook worms and 11 times for those of *Trichuris trichiura* in order to obtain results comparable with those obtained by the acid-ether concentration technique.

TURK, R. D., JONES, J. H. & CROUCH, E. K. (1954). **Phenothiazine in unweaned calves.**—*Amer. J. vet. Res.* **15**, 224-225. 1412

The daily gain in body weight of 32 unweaned calves, lightly infested with *H. contortus*, *O. ostertagi*, and species of *Trichostrongylus* and *Cooperia*, and given either 1 g. phenothiazine daily or 12.5 g. once every 21 days, was no greater than that of 25 similarly infested but untreated calves of the same age.

—R.M.

LEIPER, J. W. G. (1954). **The piperazine compound V.19 for the removal of ascaris and oesophagostomum from the pig.**—*Vet. Rec.* **66**, 596-599. [Abst. from author's summary.] 1413

From the medication of over 200 pigs, L. found that a stable compound of piperazine and carbon disulphide ("V.19") was an effective vermifuge for the removal of *A. lumbricoides* and *Oes. dentatum*, and it had the advantage that it could be given in wet or dry food without interfering with normal husbandry. In an acid medium such as gastric juice the compound decomposed into its two components. Pigs of all ages from 5 weeks upwards, including pregnant sows were treated, the dosage rates being 75-150 mg. per kg. body wt., and there were no signs of toxicity. In critical tests in pigs at 100 mg. per kg. there was 100% removal of *Ascaris* and 86.5% of *Oesophagostomum*. In field tests based on egg counts, 125 mg. per kg. was necessary to reduce the ascaris egg count by 96%. The LD₅₀ of this compound was approx. 1/20th that of sodium fluoride.

SELF, J. T. & RUSSELL, H. T. (1954). **The effect of certain chemicals on the eggs and larvae of the canine hookworm (*Ancylostoma caninum*).**—*Amer. J. vet. Res.* **15**, 281-284. 1414

The authors tested the effect *in vitro* of 9 chemical agents on the larvae of *A. caninum*. Ethylene dibromide, 1,3 dichloropropene, and a

preparation containing sodium pentachlorophenate effectively killed larvae when sprayed on to them in aqueous suspension. Benzene hexachloride, dinitro-ortho-cyclohexylphenol, and crude rotenone were effective only when large amounts were used. The dicyclohexylamine salt of dinitro-ortho-cyclohexylphenol, alkanolamine salts of dinitro-ortho-butylphenol, chlordane, and pure rotenone were ineffective.—R.M.

I. WHITNEY, L. F. & WHITNEY, G. D. (1953). **Contrasting tetrachlorethylene and *n*-butyl chloride as canine anthelmintics.**—*Vet. Med.* **48**, 495-499. 1415

II. WHITNEY, L. F. & WHITNEY, G. D. (1954). **The removal of whipworms by *n*-butyl chloride.**—*Ibid.* **49**, 78 & 88. 1416

I. The authors found *n*-butyl chloride safer than tetrachlorethylene. Dosage varies with weight of dog and species of nematode. For a 100 lb. dog fasted and in good health, 8 ml. are required for ascarids and 30 ml. for whipworms.

II. It was stated that the normal dose of *n*-butyl chloride given once an hour for five doses freed dogs from caecal whipworms.

—D. POYNTER.

MÜLLER, B. (1953). **Die Parasitischen Würmer. Ihre Biologie und Bekämpfung. Teil 1. Rundwürmer (*Nematoda*).** [Parasitic nematodes. **Biology and control.**] pp. 47. Wittenberg/Lutherstadt: A. Ziemsen. DM 1.50. 1417

This booklet, one of a series of publications on natural science in simple language, presents in general terms the fundamentals of parasitism. Six parasitic nematodes are described in some detail, namely *Ascaris lumbricoides*, *Enterobius vermicularis*, *Strongyloides stercoralis*, *Ancylostoma duodenale*, *Trichuris trichiura* and *Trichinella spiralis*. Paper and print are good. There are 24 illustrations.

—E.G.

See also abst. 1549 (report, Australia).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

CHABASSE, X. (1954). **Séminome de l'ovaire chez la vache. [Seminoma of the ovary in a cow.]**—*Rec. Méd. vét.* **130**, 561-569. 1418

The left ovary of an 8-year-old cow showed an oval neoplastic mass, 46 × 33 cm. and weighed 14.8 kg. Histologically, there were cords of polygonal cells, with clear cytoplasm, lying in a strongly-developed

fibrous stroma. The tumour was considered to be a seminoma (dysgerminoma).—E. COTCHIN.

WHEAT, J. D., BLACK, A. L., HAGE, T. J. & RHODE, E. A. (1954). **The use of beta radiation for the treatment of epithelioma of the cornea in cattle.**—*J. Amer. vet. med. Ass.* **125**, 357-360. 1419

The authors described the treatment of epithelioma of the cornea in 35 Hereford cattle by a single exposure to 25,000 r.e.p. beta rays emanating from radioactive strontium held close to the tumour. Owing to the low penetration of the beta ray, the lens and deeper structures of the eye were not damaged by the rays. These tumours do not disappear spontaneously, but all those which were not more than 2cm. diam. regressed within a few weeks after treatment. There was a recurrence in only one eye.—R.M.

KÖHLER, H. (1954). Über das Mastozytom beim Hund. [**Mastocytoma (mast cell tumour) in the dog.**]—*Dtsch. tierärztl. Wschr.* **61**, 460-466. **1420**

In a well-illustrated account of 5 cases of his own, K. gave a useful review of the relevant literature. He discussed the nature of the mast cell granule, and referred to the question of heparin and hyaluronidase content of the mast cell tumour. It is possible that some lesions of mast cell accumulation in the skin of dogs are granulomatous and not neoplastic.

—E. COTCHIN.

FONTAINE, M. & BRUDER, C. (1954). Diagnostic radiographique de l'ostéosarcome. [**X-ray diagnosis of osteosarcoma in the dog.**]—*Rec. Méd. vét.* **130**, 701-704. **1421**

The authors indicated, without illustration, the distinguishing radiographical features of bone sarcoma, osteomyelitis, exostosis, arthritis and callus. Two radiographs were reproduced, one of which was of a sarcoma of the lower end of the femur of a 6-year-old bitch: periosteal production of bone in this instance was marked.—E. COTCHIN.

BANKS, W. C. (1954). Roentgen ray therapy in venereal granuloma.—*N. Amer. Vet.* **35**, 769-772. **1422**

An account of the successful application of roentgen radiation to a vaginal location of the transmissible venereal tumour of dogs. The tumour was exposed to a total dosage of 2,244 r., divided into 7 exposures, each lasting 4-5 min., over a period of one month.—R.M.

TAYLOR, P. F. & KATER, J. C. (1954). Adenocarcinoma of the intestine of the dog and cat.—*Aust. vet. J.* **30**, 377-379. [Abst. from authors' summary.] **1423**

The authors reported intestinal adenocarcinoma in a dog and in two cats. They pointed out that more frequent recourse to histological examination might lead to more frequent diagnosis of such tumours.

ABERCROMBIE, M. & HEAYSMAN, J. E. M. (1954). Invasiveness of sarcoma cells. [Correspondence.]—*Nature, Lond.* **174**, 697-698. **1424**

Chick-heart fibroblasts in tissue-culture influenced each other's movements through their mutual contacts: when the fibroblasts touched their further movement in the direction of their point of contact tended to be stopped ("contact inhibition"). Contact inhibition occurred not only between fibroblasts from the same source, but also between those from different organs and from different species. Contact inhibition operated between the outgrowths of cells from two fragments, implanted together in a liquid medium, of neonatal mouse skeletal muscle, heart, bone or liver, but appeared to be very slight or absent when one of the explants was from a mouse sarcoma (S 37 or Crocker), no change in behaviour of the sarcoma cells being observed when they met the fibroblasts. The hypothesis that malignant cells are characterized by a reduction or absence of contact inhibition should be tested further.

—E. COTCHIN.

MASTRANGELO, A. E. & BARTH, R. (1954). Leucose—Mise au point—Deux cas. [**Leucosis in a dog and in a heifer.**]—*Schweiz. Arch. Tierheilk.* **96**, 479-484. [In French; English, German and Italian summaries.] **1425**

A 2-year-old Cocker Spaniel dog, with clinical signs of lymphatic leucosis and a total white cell count of 50,000 per cu.mm. [differential count not given] showed clinical recovery lasting at least 5 years after treatment with nicotinamide. P.M. examination of a 16-month-old heifer which had been treated without effect with antibiotics and A.C.T.H. revealed lesions of lymphatic leucosis.

—E. COTCHIN.

CAMPBELL, J. G. (1954). Avian leucosis: a plea for clarification. — *Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 193-197. [English and French summaries: p. 38 of Summaries of Section Papers. Author's summary modified.] **1426**

The conventional classification of avian leucosis includes myeloid-, lymphoid- and erythro-leucosis, fowl paralysis in all its manifestations, and osteopetrosis. C. considered that the present system was confusing and that there was no sound basis for including fowl paralysis and osteopetrosis in the leucosis complex. He stated that more evidence is needed before any of the transmissible sarcomas of fowls can be linked up with either leucosis or fowl paralysis.

GREEN, I., BEARD, D. & BEARD, J. W. (1954). **Elevation of blood magnesium and potassium in avian erythromyeloblastic leucosis.**—*Proc. Soc. exp. Biol., N.Y.* **87**, 189-191. [Authors' summary modified.] **1427**

The authors studied the levels of calcium, sodium, magnesium and potassium ions in the plasma of fowls with erythromyeloblastic leucosis. No changes from the normal were observed with the extracellular elements, calcium and sodium. In contrast, the ordinarily intracellular elements, magnesium and potassium were elevated in close relationship to the capacity of the plasma to dephosphorylate adenosine triphosphate and, consequently, to the virus content of the plasma. The source of the abnormal amounts of magnesium and potassium was not determined. They discussed the possible origin of the elements.

HUTT, F. B. & COLE, R. K. (1954). **Problems concerning leucosis and its control.**—*Papers presented to Xth World's Poult. Congr., Edinburgh, 1954*, pp. 197-201. [English and French summaries: pp. 38-39 of Summaries of Section Papers.] [Authors' summary modified.] **1428**

In most flocks of fowls visceral lymphomatosis causes about three times as much mortality as the neural form, but in the White Leghorns of the Cornell susceptible strain neural lymphomatosis was almost six times as frequent as the visceral form. The most important factors determining the mortality from leucosis are the genetic constitution of the flock, age at exposure, and severity of exposure. The last of these three seems to be related to unidentified environmental conditions. The reservoir of infection is in adult birds, all of which (in exposed flocks) probably carry the virus. Losses can be best reduced by keeping chicks away from adult fowls during the first 2 months after hatching. On the other hand, enough chicks should be exposed to the disease to facilitate selection of resistant families and strains. During the last 5 years, mortality of

fowls up to the age of 18 months from leucosis in the two resistant strains at Cornell was 4.6% under conditions of exposure that caused 50.7% mortality in the susceptible strain.

WATERS, N. F. (1954). **Avian lymphomatosis mortality among inbred line crosses.**—*Papers presented to Xth World's Poult. Congr., Edinburgh, 1954*, pp. 201-205. [English and French summaries: p. 39 of Summaries of Section Papers. Author's summary modified.] **1429**

Six different lines of inbred White Leghorn fowls, which showed various degrees of resistance to naturally occurring avian lymphomatosis were cross-bred. W. gave the average yearly mortality from neural and visceral lymphomatosis among these fowls over a period of 14 years. Among the cross-bred progeny mortality from the disease was equal to, or greater than, that of the most susceptible fowls. He concluded that cross-breeding of inbred fowls did not decrease mortality from lymphomatosis. Considering all the various types of crosses made, he could draw no conclusions as to the mode of inheritance of resistance to the disease.

LANNEK, N. (1954). **The effect of nitrofurazone on experimental lymphomatosis in chicks.**—*Nord. VetMed.* **6**, 693-700. [In English. German and Swedish summaries. Author's summary modified.] **1430**

L. studied the influence of nitrofurazone on the growth of a strain of lymphoid tumour in chicks. The drug was given intraperitoneally in 2 experiments and in the food in 3 experiments. With the exception of one experiment in which the drug was given mixed with the food at the high conc. of 0.1% nitrofurazone was well tolerated as judged by daily determinations of body wt. In all experiments the treated chicks developed tumours somewhat faster and died a little earlier from metastasizing tumours than the non-treated, tumour-inoculated controls.

NUTRITIONAL AND METABOLIC DISORDERS

I. LINDGREN, N. O. (1953). **Studies in the growth promoting action of antibiotics in poultry nutrition.**—*Proc. XVth Int. vet. Congr., Stockholm, 1953*. Part I. Vol. 2, pp. 913-921. Discussion: Part II. pp. 360-365. [In English. French and German summaries.] **1431**

II. LINDGREN, N. O. (1954). **Studies in the growth promoting action of antibiotics in poultry nutrition (III).**—*Nord. VetMed.* **6**,

701-706. [In English. German and Swedish summaries.] **1432**

I. Chicks were fed a diet containing 5 mg./kg. penicillin for the first 6 weeks of life; an increased growth rate was observed. In one experiment, some of these 6-week-old chicks were deprived of the antibiotic for the following 2 weeks, and the growth rate was depressed. L. considered this to be a direct result of withdrawal of antibiotic. In other experiments, the

remainder of the chicks were also deprived of penicillin, and some were given cultures of either *Staph. aureus* or an avian strain of *Bact. coli* in the drinking water for 2 weeks. The depression of growth rate following withdrawal of penicillin did not occur in these birds. Mortality was low, and was no higher than in birds not fed penicillin but exposed to infection with the same organisms. L. concluded that the administration of penicillin in the food during the first 6 weeks of life did not appear to reduce resistance to subsequent infection, and that this infection seemed to have an action on the growth rate synergistic with that of penicillin.

In further experiments, reported in Part II of the *Proceedings*, L. found that the administration of either penicillin or neomycin to chicks in the food had no effect on the *Bact. coli* count of the faeces. He noticed a synergistic effect of antibiotic and *Bact. coli* on the growth rate, similar to that described above.

II. L. was unable to demonstrate any relationship between the growth rate and the coliform counts of the crop contents or faeces of chicks fed with or without antibiotics. He discussed the mechanism of the growth promoting action of penicillin and neomycin.

—R.M.

ANDERSON, G. W., SLINGER, S. J. & PEPPER, W. F. (1953). Bacterial cultures in the nutrition of poultry. I. Effect of dietary bacterial cultures on the growth and cecal flora of chicks.—*J. Nutr.* 50, 35-46. 1433

ANDERSON, G. W., SLINGER, S. J., PEPPER, W. F. & HAUSER, M. M. (1953). Bacterial cultures in the nutrition of poultry. II. Effect of dietary coliform cultures on the growth and cecal flora of poults.—*Ibid.* 47-57. 1434

I. The authors described experiments investigating the mechanism involved in the growth response of chicks to penicillin. Synergistic interaction appeared to exist between the antibiotic and certain strains of *Bact. coli* whilst penicillin corrected the inhibitory influence of certain intestinal micrococci on growth.

II. The experiments reported in I (*supra*) were repeated in part on turkey poults; the organism used being isolated from the caeca of chicks. The synergistic interaction was again observed.—F. T. W. JORDAN.

STEVENS, M. S. (1954). St. George disease of cattle.—*Qd agric. J.* 78, 327-331. 1435

An account of a disease of cattle in Queensland believed to be a deficiency disease,

characterized by diarrhoea with profuse, dark, foetid faeces and later by oedematous swelling of the head, neck and brisket. Animals fed on lucerne hay or good quality wheat hay generally recover in two or three weeks.—THOMAS MOORE.

HEALD, P. J. (1953). The fermentation of xylans in the rumen of sheep.—*Brit. J. Nutr.* 7, 124-130. 1436

Xylans are constituents of the cellulose complex present in grasses. H. determined, by means of chromatography, the amount of xylose (derived from xylan by hydrolysis) in hay and in the contents of the abomasum of sheep. He found that from 25% to 50% of xylan present in hay was fermented in the rumen, and that 60-80 g. xylan was fermented in the rumen of a sheep at pasture in 24 hours.

—R.M.

I. CENNI, B. (1954). Variazioni della velocità di sedimentazione delle emazie in pecore alimentate con foraggi conservati mediante soluzioni di acidi minerali. [Erythrocyte sedimentation rate in sheep fed silage conserved by solutions of mineral acids.]—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo*, 1953. 7, pp. 437-439. [English and French summaries.] 1437

II. SPISNI, D. (1954). Il pH del contenuto del rumine di pecore alimentate con insilato di erba medica A.I.V. [The pH of rumen contents of sheep fed lucerne silage conserved by mineral acids.]—*Ibid.* pp. 442-446. [English and French summaries.] 1438

I. In 5 sheep C. observed an increase in the erythrocyte sedimentation rate after the sheep had fed for 30 days on lucerne ensiled by the A.I.V. method.

II. The pH of the rumen contents of 4 adult sheep, fed exclusively for 32 days with silage prepared from lucerne by the A.I.V. method, decreased from 7.2-8.2 to 6.3-6.6 at the 11th day of the silage diet. By the 32nd day the pH had increased to 7.1-7.6.—R.M.

MCCLYMONT, G. L. (1954). Paresis associated with spinal cord myelin sheath degeneration in new born pigs.—*Aust. vet. J.* 30, 345-346. 1439

A report on a condition found in new-born piglets, involving inability to stand and to co-ordinate movements; every piglet of six litters farrowed on the one farm was affected. At the subsequent farrowing the litter of one sow only was affected.

There was degeneration of the myelin sheaths in the ventral and ventro-lateral segments of the spinal cord and medulla. The

author discussed possible nutritional factors in the aetiology.—K. G. JOHNSTON.

MORRISON, A. B. & McCANCE, R. A. (1954).

Morphological observations on the bones of a pig on a low plane of nutrition from birth.—

J. Anat., Lond. **88**, 566. [Only abst. given. Abst. from abst.] **1440**

A female pig fed from seven weeks of age on a normal but greatly reduced diet was killed after seven months. The bones were found to be lighter and finer and the epiphyseal cartilages were narrower and smoother than normal, but there was no evidence of defective calcification.—J. A. NICHOLSON.

SUCHALLA, H. (1952). Esmodil als Peristaltikum bei der Tympanie des Kaninchens. [Esmodil (2-methoxyprop-2-enyltrimethylammonium bromide) as a peristaltic in tympanites in rabbits.] — *Vet.-med. Nachr.* No. 3, 105-109. **1441**

S. claimed good results for the subcutaneous administration of 0.5–1 mg./kg. of "esmodil" (2-methoxyprop-2-enyltrimethylammonium bromide) in tympanities in 7 rabbits.—R.M.

PAGET, G. E. (1954). Exudative hepatitis in guinea-pigs. — *J. Path. Bact.* **67**, 393-400. [Author's summary modified.] **1442**

P. described a disease of g. pigs, characterized by ascites and oedema, accompanied by microscopic changes in the liver, pancreas and lymphoid tissue. Many of these changes appear to be unique to this disease. He discussed the possible causation and concluded that it is related to the consumption of a pelleted diet, and is probably a deficiency state.

GOLDHAFT, T. M. & WERNICOFF, N. (1954). A report on a haemorrhagic condition occurring in poultry in the United States.—*Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 278-282. [English and French summaries: p. 56 of Summaries of Section Papers.] [Authors' summary modified.] **1443**

The authors described outbreaks of the "haemorrhagic syndrome" in 68 flocks of fowls. Lesions consisted of haemorrhages in the muscles and in other organs. Attempts to recover infective agents were unsuccessful, and they suggested that the condition was one of nutritional origin. Uniform improvement in affected flocks followed the use of the vitamin K analogue, menadione sodium bisulphite, given in the drinking water at a conc. of 10 mg./gal. for 2-3 days. The disease was not prevented when the drug was added to the food. The

syndrome had been produced by the administration of sulphaquinoxaline in the food, but it frequently occurred in fowls which had not received that drug. They suggested that the condition is caused by an unknown factor associated with vitamin K deficiency.

I. D'AGOSTINO BARBARO, A. (1953). Valore alimentare del latte sottoposto a trattamento con ultrasuoni. [Nutritive value of milk exposed to ultrasonic waves.]—*Atti Soc. ital. Sci. vet., Sanremo*, 1952. **6**, pp. 158-161. [English and French summaries.] **1444**

II. D'AGOSTINO BARBARO, A. (1954). Effetti dell'alimentazione esclusiva con latte sottoposto a trattamento con ultrasuoni sull'accrescimento ponderale del ratto. [Growth rate of rats fed milk which had been exposed to ultrasonic waves.]—*Ibid.* 1953. **7**, pp. 268-274. [English and French summaries.] **1445**

I. Three groups of 8 rats were fed for 2 months on milk alone. 4 rats from each group were given milk which had been exposed to ultrasonic waves of 1000 kc. frequency and 4 W/cm. field intensity for 1, 10, and 30 min. respectively. There were no differences in growth rate or health between rats which had received untreated milk and those which had received treated milk.

II. The above experiments were continued for a further 4 months. At the end of this time, the average body weight for rats which had been given milk exposed to ultrasonic waves for 1 min. was 240 g. compared with 210 g. for rats of the same group which had been given untreated milk. There were no discrepancies in body wt. between rats of the other groups.—R.M.

ASCHAFFENBURG, R., BARTLETT, S., KON, S. K., ROY, J. H. B., SEARS, H. J., THOMPSON, S. Y., INGRAM, P. L., LOVELL, R. & WOOD, P. C. (1953). The nutritive value of colostrum for the calf. IX. The effect of soya-bean lecithin on the vitamin A absorption and on the growth rate of calves given small quantities of separated colostrum. — *Brit. J. Nutr.* **7**, 275-285. [Authors' summary modified.] **1446**

Eighty bull calves were used in 2 experiments, one carried out in autumn and one in spring, to test the effect of soya-bean lecithin on the growth rate and on absorption of vitamin A, as measured by plasma conc. and by the liver reserves at 21 days of age. Eighteen calves were deprived of colostrum and were fed a standard diet. All these calves died, even when they had been given supplements of

lecithin and vitamin A. Sixty-two calves were each given 400 ml. separated colostrum: only 8 or them died.

The feeding of vitamin A, with or without lecithin, had no significant effect on the incidence of scouring, high body temp., or on growth rate. The feeding of lecithin with vitamin A did not result in greater plasma conc. of the vitamin than that obtained by feeding the vitamin alone.

KUHN, R., BROSSMER, R. & SCHULZ, W. (1954). Über die prosthetische. Gruppe der Mucoproteine des Kuh-Colostrums. [Prosthetic groups in the mucoprotein of bovine colostrum.]-*Chem. Ber.* **87**, 123-127. 1447

The authors isolated a crystalline substance, having the empirical formula $C_{11}H_{16}O_9N$, from the mucoprotein fraction obtained by dialysis of bovine colostrum. Its chemical properties were similar to those of sialinic acid described by Blix (1936) and of the methoxy derivative of neuraminic acid described by Klenk (1941).
—R.M.

BLOCK, R. J. & ZWEIG, G. (1954). Studies on bovine whey proteins. II. Removal of iron from ferric derivatives of the whey proteins. —*Arch. Biochem.* **48**, 386-394. 1448

The removal of iron from ferrilactin (ferric salt of the whey proteins of cow's milk) was accomplished by reduction with sulphur dioxide or sodium dithionite, or by the exchange of ferric ions with hydrogen ions by strong cation-exchange resins from an acid solution. The authors described some properties of the product thus obtained.—R.M.

BLAXTER, K. L., WOOD, W. A. & MACDONALD, A. M. (1953). The nutrition of the young Ayrshire calf. XI. The toxicity of cod-liver oil.—*Brit. J. Nutr.* **7**, 34-50. [Authors' summary modified.] 1449

The daily addition of 1-4 oz. cod-liver oil to a dried skim-milk ration resulted in death or in severe muscular dystrophy in a high proportion of 28 bull calves. Besides severe dystrophy of limb muscles, dystrophy of the diaphragmatic, intercostal, and heart muscles was observed. A higher number of calves died in experiments performed in late winter than in experiments in early autumn. The authors described the P.M. findings and the histology of lesions. The nervous system was not involved, and no gross abnormalities were present in the liver and kidneys. Four calves which were given vitamins A and D in the food, in addition to cod-liver oil, developed mild muscular dystrophy, from which they

recovered: only slight lesions were observed at P.M. examination. They discussed the significance of these findings in view of the practice of adding cod-liver oil to the rations of young calves.

BLAXTER, K. L., BROWN, F. & MACDONALD, A. M. (1953). The nutrition of the young Ayrshire calf. XII. Factors affecting the tocopherol reserves, muscle composition, and muscle histology of 4-day-old calves.—*Brit. J. Nutr.* **7**, 105-123. 1450

The authors studied the incidence of muscular dystrophy in the calves of three Ayrshire herds on different diets, to see whether the incidence of muscular dystrophy was related to vitamin E reserves. They studied the tocopherol contents of various tissues, the muscle chemistry and muscle histology of calves born in late winter and early autumn, and the tocopherol content of the colostrum and milk of the dams under different feeding conditions. They concluded that, although the vitamin E reserves of the calves varied widely, "this was not the sole reason for the variation in signs of dystrophy observed.—A.S.

DICK, A. T. (1954). Studies on the assimilation and storage of copper in crossbred sheep.—*Aust. J. agric. Res.* **5**, 511-544. 1451

Increased copper intake is reflected by increased copper content of the liver. Ferrous sulphide lowered the copper content of the liver by 75%. Molybdenum had a severely limiting effect on the storage of copper in the liver in the presence of sufficient inorganic sulphate. D. discussed the possible bearing of these findings on conflicting field observations.
—R. GWATKIN.

STEWART, J. (1953). The effects of cobalt deficiency on the appetite of lambs.—*Brit. J. Nutr.* **7**, 231-235. [Abst. from author's summary.] 1452

S. found that cobalt deficiency diminished the appetite of lambs, and that the reduction in food intake was the cause of wasting—the clinical sign of cobalt deficiency. When lambs previously fed an unrestricted diet deficient in Co were given a supplement of Co, an increase in body weight occurred as a direct result of increase in appetite.

JETER, M. A. & DAVIS, G. K. (1954). The effect of dietary molybdenum upon growth, hemoglobin, reproduction and lactation of rats.—*J. Nutr.* **54**, 215-220. [Authors' summary modified.] 1453

Molybdenum as sodium molybdate was

fed to newly-weaned and to mature rats in order to study the effect of molybdenum upon growth and reproduction. The gain in weight of both sexes was retarded, but males were affected to a greater extent than females. Seventy-five per cent of the males which were fed from weaning a diet containing 80 and 140 p.p.m. of molybdenum were sterile. Limited histological examination revealed some testicular degeneration. Fertility and gestation in females were unaffected by the quantities of molybdenum fed, but there was some interference with normal lactation.

WEIR, W. C. & RENDIG, V. V. (1954). **Serum inorganic sulfate sulfur as a measure of the sulfur intake of sheep.**—*J. Nutr.* **54**, 87-96. [Authors' summary modified.] **1454**

The authors showed that the level of inorganic sulphate sulphur in the serum of sheep varied with the sulphur intake of the animal. In two trials, using pelleted, low-sulphur lucerne with a methionine supplement, the serum sulphate ranged from 2.0 to 4.0 mg.% with a sulphur intake of 1.7 g. or more per sheep per day. When the same amount of the same feeds without the methionine supplement was fed, the serum sulphate dropped below 1.0 mg.% on a sulphur intake of 1.0 to 1.5 g./day. When fed on a low-sulphur purified ration (S=0.02%), sheep were found to have very low serum sulphate values. After 14 days on the purified ration all sheep showed values of less than 0.2 mg.%. The administration of 3-g. capsules of elemental sulphur twice daily to each sheep fed the purified ration resulted in a rapid increase in serum sulphate. The addition of elemental sulphur to the purified ration resulted in a slower increase in serum sulphate.

The authors recommended the blood test which they had used.

SORENSEN, D. K., KOWALCZYK, T. & HENTGES, J. F. (1954). **Cerebrospinal fluid pressure of normal and vitamin A deficient swine as determined by a lumbar puncture method.**—*Amer. J. vet. Res.* **15**, 258-260. [Authors' summary modified.] **1455**

The authors described a method for determining the cerebrospinal fluid pressure of pigs by lumbar puncture. The average pressure of 14 apparently normal pigs was 109.5 mm. The values ranged from 80 mm. to 145 mm. An increase in pressure up to 220 mm. was observed in pigs which were deficient in vitamin A. They suggested that by this means the onset of a vitamin A deficiency can be determined.

DINNING, J. S., NEATROUR, R. & DAY, P. L. (1954). **The effect of folic acid deficiency on the metabolism of choline by chick bone marrow.**—*J. biol. Chem.* **209**, 717-721. **1456**

Bone-marrow studies in folic acid deficiency in chicks show that there is an increase in endogenous oxygen consumption and succinic oxidase and a loss of choline oxidase with an increased incorporation of choline into phospholipides by bone marrow cells. *In vitro*, the incorporation of choline into phospholipides is greatly stimulated by adenosine triphosphate.

—J. A. NICHOLSON.

KEEP, J. M. (1954). **Diabetes mellitus in a Persian cat.**—*Aust. vet. J.* **30**, 347-349. [Author's summary modified.] **1457**

A 3½-year-old cat with diabetes mellitus was finally stabilized on a dose rate of 3 units of soluble insulin and 3 units of zinc protamine insulin per kg. body wt. The animal progressed well for several months, until the development of an acute cystitis with extensive bladder damage led to its destruction.

DORNER, M. & STAHL, J. (1954). **Effets du chlorure de cobalt sur les cellules alpha, le contenu en facteur hyperglycémiant du pancréas et la glycémie du chien. [Action of cobalt on the islets of Langerhans and on glycaemia in the dog.]**—*C. R. Soc. Biol., Paris.* **148**, 590-593. **1458**

I/v injection of cobalt chloride in dogs was followed by a partial, but not complete, destruction of the α -cells of the islets of Langerhans. Injected pancreatic extracts from dogs given CoCl_2 produced a less marked hyperglycaemia than that obtained with normal pancreatic extracts. When alteration of α -cells was maximal no hyperglycaemia was obtained. The authors deduced that a hyperglycaemic factor originates in the α -cells.—D. POYNTER.

BINNERTS, W. T. (1954). **Goitre and the iodine content of cow's milk.** [Correspondence.]—*Nature, Lond.* **174**, 973-974. **1459**

Observations in the Netherlands had shown that the iodine content of milk varies markedly in goitrous and non-goitrous areas; a variation roughly corresponding to the milk yield was also observed. It is considered that the determination of iodine in milk is the best means of determining the iodine status of cattle.

—J. A. NICHOLSON.

ROBERTSON, A. & THIN, C. (1953). **A study of starvation ketosis in the ruminant.**—*Brit. J. Nutr.* **7**, 181-195. [Authors' summary modified.] **1460**

The effect on the rumen contents of the

starvation of 5 cows when at the peak of lactation was to produce a sharp fall in the total volatile fatty acids, accompanied by a rise in pH, which was presumably associated with decreased bacterial activity in the rumen. There was at the same time a rise in the blood conc. of ketones, one of which — isopropanol — was probably formed from acetone in the rumen.

PUGH, P. S. (1954). **Hyperketonaemia and foetal death in the sheep.**—*Vet. Rec.* **66**, 645-652. 1461

In order to study the connexion between conditions associated with hyperketonaemia in

the ewe and foetal death, blood ketones and reducing sugar concentrations were determined in 6 cases of idiopathic pregnancy toxæmia, 8 cases of experimentally induced starvation ketosis, 8 cases in which pathological changes had occurred in the placenta and foetuses, and in 10 cases infected with the virus of enzootic-abortion. It was concluded that in idiopathic and starvation pregnancy toxæmias the foetuses are alive, but in nutritional pregnancy toxæmia a proportion of foetal deaths may occur. P. suggested that the susceptibility of the pregnant ewe to ketosis may also depend upon placental function.—J. A. NICHOLSON.

DISEASES, GENERAL

MACKERRAS, I. M. (1953). **Animal reservoirs of infection in Australia.**—*Proc. roy. Soc. Qd.* **65**, 1-23. 1462

M. provided a detailed annotated check list of infections of man in Australia which are derived from other animals. He discussed the problems of ecology raised from a consideration of the list, and the development of future research. In research the work of the microbiologist, zoologist and field ecologist should be closely integrated.—K. G. JOHNSTON.

BOUVIER, G., BURGISSER, H. & SCHNEIDER, P. A. (1954). **Monographie des maladies du lièvre en Suisse. [Monograph on diseases of hares in Switzerland.]** pp. 68. Lausanne: Service vétérinaire cantonal et Institut Galli-Valerio. 1463

The central laboratory of the Institut Galli-Valerio at Lausanne, for the study of diseases of game in Switzerland examines and reports on animals found dead and sent in by gamekeepers, customs officials, the police, huntsmen or individuals. From July 1944 (when the Institute was founded) up to June 1954, it had examined 777 dead hares. The authors gave short descriptions of the conditions found in these hares, the findings being given under aetiological headings. The commonest diseases found were pasteurella infections including *Past. pseudotuberculosis*, staphylococcal and brucella infections; intestinal coccidiosis and liver-fluke infestation, and a variety of conditions, such as anatomical abnormalities, tumours and poisoning.—M. B. HAWKSLEY.

RANBY, P. (1954). **The principal disease problems in our poultry industry.**—*Qd agric. J.* **78**, 226-232. 1464

Respiratory diseases, fowl leucosis and coccidiosis are considered the most important

disease problems in the poultry industry in Queensland. Less important diseases are blackhead, *Salmonella pullorum* infection, nematode infestations, "bluecomb" disease, botulism, infestation with the stickfast flea (*Echidnophaga gallinacea*) and with ticks, and spirochaetosis.—THOMAS MOORE.

HEPPLESTON, A. G. (1954). **Changes in the lungs of rabbits and ponies inhaling coal dust underground.**—*J. Path. Bact.* **67**, 349-359. [Author's summary copied *verbatim*.] 1465

Rabbits inhaled coal dust or mixed coal and rock dust underground in a steam-coal mine in South Wales for periods up to 3½ years. The conditions of the experiment in respect of dust were practically identical with those in which the miners work.

Discrete dust foci developed in the rabbits' lungs but the accumulation of dust did not induce fibrosis. It made no difference whether the animals inhaled rock and coal dust or coal dust largely uncontaminated by rock dust. A focal form of emphysema developed in relation to the dust foci in a few animals.

Pit ponies occasionally develop pulmonary dust foci in which a reticulon fibrosis occurs but without focal emphysema.

A group of rabbits was exposed to dust underground in an anthracite mine, but, as two of them died from caseous tuberculosis of the lungs, the others were killed before the conclusion of the experiment.

TOMASEK, V. (1954). **Prilog etiologiji i terapiji mjesečne sljepoće. [Aetiology and treatment of equine periodic ophthalmia.]**—*Vet. Glasn.* **8**, 243-250. [In Croat. Abst. from German summary.] 1466

The serum of 12 out of 35 horses with equine periodic ophthalmia contained agglu-

tinins against *Leptospira pomona* at titres of 1:1,000–1:3,000. T. was unable to isolate this organism from the aqueous humour of affected eyes, and failed to reproduce the disease by inoculating healthy horses with *L. pomona* culture by various routes. Local application or systemic administration of penicillin appeared to have no effect on the course of the disease. —R.M.

GRIEM, W. (1954). Die Nebennierenveränderungen beim enzootischen Herztod der Schweine. [**Changes in the adrenal glands in fatal syncope of pigs.**] — *Dtsch. tierärztl. Wschr.* **61**, 417–424. **1467**

G. investigated the adrenal glands in 20 cases of fatal syncope in pigs, noting a reduction in weight and in the thickness of the cortex, sufficient to cause considerable loss of function. By the injection of diphtheria toxin, which has a destructive action on the adrenal glands, he produced death in piglets with pathological changes resembling those of fatal syncope. He concluded that the disease caused death by impairment of adrenal function. —A.S.

PAATSAMA, S. (1954). **The structure and histopathology of the canine meniscus.** — *Amer. J. Vet. Res.* **15**, 495–499. [Author's summary modified.] **1468**

P. described briefly the structure of the menisci of the stifle joint of dogs. Pathological changes, such as increase of chromotropic substance and hyalinization, slit formation, fatty degeneration, and colliquative necrosis were found in the menisci of old dogs, particularly as a result of injury to the joint. Cutting the cruciate ligament of the stifle joint caused similar changes to develop in the menisci within 50 days.

RUST, J. H., TRUM, B. F. (1953). **Total body irradiation of various species of animals — some physiologic and pathologic effects evident in blood, bones and thyroid.** — *Proc. XVth Int. vet. Congr., Stockholm*, 1953. Part I. Vol. 1. pp. 585–588. Part II. pp. 289–296. [In English. French and German summaries.] **1469**

The authors described recent work on the exposure of donkeys, pigs, dogs, rats and fowls to gamma rays, with particular reference to the effects of irradiation on blood and bone. [See also *V.B.* **24**, 3388 & 3874]. —R.M.

GLEISER, C. A. (1954). **The pathology of total body radiation in dogs which died following exposure to a lethal dose.** — *Amer. J. vet. Res.* **15**, 329–335. **1470**

G. had previously described the symptoms observed in 18 dogs exposed to lethal doses of X-rays [*V.B.* **24**, 1722]. The main pathological changes in these dogs were haemorrhage in and degeneration of body tissues, with almost no signs of regenerative processes. These changes were particularly marked in lymphatic tissue, haemopoietic tissue of the bone marrow, the digestive system (particularly the small intestine and colon), testicles, and kidneys. The central nervous system and certain types of epithelial tissue, such as the salivary, adrenal, prostate, and thyroid glands and the pancreas and liver, were relatively resistant to radiation. There was also invasion of the skin by bacteria, which was unaccompanied by inflammatory reaction. —R.M.

RUBARTH, S. (1953). Hepatitiden in der Veterinärmedizin. [**Hepatitis in animals.**] — *Schweiz. Z. allg. Path.* **16**, 587–598. [In German.] **1471**

R. presented a comprehensive review of canine virus hepatitis. He discussed bacterial types of hepatitis in cattle, miliary necrotic hepatitis of new-born calves (resembling morphologically calf salmonellosis) and hypertrophic liver cirrhosis of calves 3–6 months old. He dealt similarly with dystrophy of the liver in pigs. Mention was also made of the liver-brain syndrome in horses, bacterial and mycotic purulent necrotic hepatitis and hepatitis caused by various parasites in different species. —R. B. HOLCOMBE.

BLAIR, G. W. S., WILLIAMS, P. O., FLETCHER, E. T. D. & MARKHAM, R. L. (1954). **On the flow of certain pathological human synovial effusions through narrow tubes.** — *Biochem. J.* **56**, 504–508. **1472**

Using a simple viscometer in a constant temperature water bath the authors studied the flow properties of human and bovine synovial fluids. They expressed the flow properties, not in terms of simple viscosity, but in a more complex formula taking into account that synovial fluids are not simple Newtonian liquids. From their results they did not consider that such measurements would be useful in diagnosis, although they might prove interesting if studied in relation to biochemical changes. —A.S.

POISONS AND POISONING

PEIRCE, A. W. (1954). **Studies on fluorosis of sheep. II. The toxicity of water-borne fluoride for mature grazing sheep.**—*Aust. J. agric. Res.* **5**, 545-554. **1473**

The ingestion of the amounts of fluoride supplied by drinking water containing 0.3, 10 or 20 p.p.m. F appeared to have no adverse effect on the general health, body weight or wool production of three groups of 16 mature sheep grazing on pasture over a period of 26 months. Water consumption was 0.5 l. or less per day during winter months and rose to between 3 and 4 l. per day during summer. Hence F ingestion was only 4-5 mg. per day in the treated groups during winter and rose to approx. 30 and 60 mg. per day respectively during summer (0.4 and 0.8 mg. F per kg. body wt. respectively).

A brown deposit was present on the incisor teeth of all sheep throughout the experiment but was more pronounced during periods when the pasture was green; it did not appear to be related to F intake. No mottling of the incisors or molars was observed, nor was there any evidence of excessive or uneven wear on these teeth. F ingestion brought about increases up to threefold in the F content of the bones and teeth.—R. L. REID.

PATTISON, F. L. M. (1954). **Toxic fluorine compounds.**—*Nature, Lond.* **174**, 737-741. [Author's summary modified.] **1474**

A preliminary account of the preparation of chemical compounds containing an ω -fluorine atom and the testing of them in mice by s/c injection. They included ω -fluoroalkyl halides, ω -fluoroalkenes and ω -fluoroalkynes, ω -fluoroalkyl thiocyanates, ω -fluoroalkyl mercaptans, ω -fluoroalkanesulphonyl chlorides and fluorides, miscellaneous ω -fluoro sulphur compounds, and certain fluorinated analogues of significant pharmacological compounds. He attempted to correlate their toxicity with known metabolic mechanisms: the results and conclusions exemplified a method of demonstrating *in vivo* conversion of certain functional groups in aliphatic compounds. He surveyed the preparation and synthetic uses of these fluorine compounds.

CAMERON, G. R. (1954). **Toxicity of chlorsulphonic acid-sulphur trioxide mixture smoke clouds.**—*J. Path. Bact.* **68**, 197-204. [Author's summary modified.] **1475**

Laboratory animals were exposed to the fumes of chlorsulphonic acid. Only the g. pig proved susceptible, dying from bronchial

spasm, pulmonary oedema and acute bronchitis. Lesions of broncho-pneumonia were found in the lungs of g. pigs which survived the experiment.

C. concluded that human beings not subject to pulmonary disturbance should prove resistant to chlorsulphonic acid smoke in relatively low concentrations in the open air. A hazard may, however, exist in persons who suffer from asthma or allied conditions. High concentrations are dangerous.

SCHOLTEN, H. H. & BEIJERS, J. D. (1954). Een geval van koolmonoxide-vergiftiging bij paarden. [**Carbon monoxide poisoning in horses.**]—*Tijdschr. Diergeneesk.* **79**, 567-571. [English, French and German summaries.] **1476**

An account of carbon monoxide poisoning in 7 horses and their groom, caused by a stove in an adjoining garage. Symptoms were excitation, dyspnoea, inability to stand, tachycardia and cyanosis of the mucosae. One horse died.—C. A. VAN DORSEN.

KENDRICK, J. W., TUCKER, J. & PEOPLES, S. A. (1955). **Nitrate poisoning in cattle due to ingestion of variegated thistle, *Silybum marianum*.**—*J. Amer. vet. med. Ass.* **126**, 53-56. [Authors' summary modified.] **1477**

The authors reported nitrate poisoning of 9 out of 60 heifers following the ingestion of *S. marianum* ("milk thistle") in May. The primary P.M. finding was the chocolate-coloured blood typical of methaemoglobinaemia. Thistles collected from the area contained high levels of nitrate. Symptoms of the disease were reproduced experimentally by feeding thistles harvested from the area in May and June.

I. BALDISSERA NORDIO, C. (1952). Ricerche sul comportamento ematologico dei polli trattati con *Allium cepa*. [**Blood picture of fowls following the feeding of onions (*Allium cepa*).**]—*Boll. Soc. ital. Biol. sper.* **28**, 1008-1009. **1478**

II. BALDISSERA NORDIO, C. (1953). Nuove ricerche su l'anemia da *Allium cepa*. I. Azione della vitamina B₁₂ nell'anemia da cipolle. II. Alterazione del quadro ematico nel cane per moderate quantità di cipolle. [**Anaemia following the feeding of onions. I. Effect of vitamin B₁₂ on anaemia in rabbits. II. Blood picture of dogs fed with onions.**]—*Ibid.* **29**, 12-15. **1479**

I. An account of anaemia which developed in 6 fowls after they had been fed a

diet containing 60–150 g. cooked onions daily for 4 weeks. [See also *V.B.* **23**, 170.]

II. The daily administration of vitamin B₁₂ appeared to improve the blood picture of 2 rabbits with anaemia which resulted from their each being fed 500 g. onions daily for up to 48 days. Three dogs developed anaemia after they were fed 4–8 g./kg. body wt. of onions for 7–14 days. [See also *V.B.* **24**, 1202.]—R.M.

I. CARLL, W. T., FORGACS, J. & HERRING, A. S. (1954). **Toxicity of fungi isolated from a food concentrate.**—*Amer. J. Hyg.* **60**, 8–14. 1480

II. FORGACS, J.; CARLL, W. T., HERRING, A. S. & MAHLANDT, B. G. (1954). **A toxic *Aspergillus clavatus* isolated from feed pellets.**—*Ibid.* 15–26. [Absts. from authors' summaries.] 1481

I. Three species of *Aspergillus* (*A. chevalieri*, *A. tamarii* and one belonging to the *A. flavus-oryzae* group) were isolated from a commercial food concentrate that had been incriminated in outbreaks of hyperkeratosis in cattle.

Ether extracts of bread on which *A. chevalieri* had been cultured, when applied topically on a calf, produced an acute inflammatory dermal reaction, characterized by hyperaemia, oedema, and wrinkling and folding of the skin of the neck, systemic depression, apathy, increased pulse, respiration, lachrymation and cachexia.

A suspension of such bread culture given through a stomach tube caused fatal illness in two calves; the lesions were haemorrhages and general congestion and degenerative changes in

the liver and kidneys. In a calf that had been fed sublethal doses of the toxic bread the level of vitamin A in the blood fell from 20 to 12 µg./100 ml. after the third day of feeding.

II. The authors isolated a toxic strain of *A. clavatus* from a pelleted feed that had been incriminated in outbreaks of hyperkeratosis in cattle and that did not contain highly chlorinated naphthalenes.

There was a direct relationship between the toxicity of ether extracts applied topically and the toxicity of maize on which the fungus had been cultured.

When cultured on whole grain maize and lucerne, and on lucerne alone, the fungus produced an antibacterial substance and a factor causing inflammation of the skin.

When whole grain maize on which the fungus had been cultured was force-fed to calves, it produced acute and chronic symptoms of hyperkeratosis and subsequent death.

The antibacterial substance isolated from media on which the fungus had been cultured and from the toxic pelleted feed produced acute symptoms of toxicity and subsequent death in mice.

GALLO, G. G. (1954). Dos casos de fotosensibilización en el ganado. [**Photosensitization in two horses.**]—*Rev. Vet. milit., B. Aires.* **2**, No. 4, pp. 45–47. 1482

G. recorded the occurrence of photosensitization in a grey horse and mare, 14 and 10 years old respectively, thought to be the result of the ingestion of *Lathyrus hookeri* and *Vicia nigricans*. Both animals made a good recovery following a change in diet and protection from the sun.—I. W. JENNINGS.

See also abst. 1549 (report, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

CRONHEIM, G. & HYDER, N. (1954). **Effect of salicylic acid on adrenal-pituitary system. III. Studies on mechanism of this effect.**—*Proc. Soc. exp. Biol., N.Y.* **86**, 409–413. 1483

Salicylic acid has a specific action on the adrenal-pituitary system in normal animals. The authors studied in rats the duration of such action, the effects of repeated dosage, and of pretreatment with cortisone, and the possible mechanism of its action. Appreciable levels of salicylic acid were still present in the blood more than 16 hours after a single inj. of 300 mg./kg. Repeated injections did not impair the responsiveness of the adrenal glands. Pretreatment with cortisone reduced, but did

not abolish, the effect of salicylic acid. Complete anaesthesia with pentobarbital blocked the effect of salicylic acid. They concluded that salicylic acid acts on the hypothalamus with subsequent stimulation of the pituitary.

—F.E.W.

SADEK, S. E. (1954). **Penicillin concentration in bovine blood and milk after intramuscular injection and its application in the treatment of mastitis.**—*J. Amer. vet. med. Ass.* **125**, 387–390. [Author's summary modified.] 1484

Penicillin was readily detected in the milk of cows about an hour after the i/m or s/c injection of 5,000 units per lb. body wt. The

conc. in the milk usually remained within the therapeutic range (0.032 units per ml.) for 24 hours, despite normal twice-daily milking. S. compared the disadvantages of intramammary infusion of the antibiotic with the advantages of i/m injection. He found that i/m injection every 24 hours for 3 days, at the dosage stated above, was effective in the treatment of streptococcal and staphylococcal mastitis.

BELL, R. C., RANNIE, I. & WYNNE, N. A. (1954). **Adverse reactions to procaine penicillin in cats and man.**—*Lancet*. **267**, 62-66. 1485

The intravenous injection of procaine penicillin in aqueous suspension caused severe reaction or death in cats. Details are given of the lesions produced by such an injection.

—A. ACKROYD.

TYLER, C. (1954). **A further study of the effect of sulphanilamide on the metabolism of calcium and phosphorus in the laying hen.**—*J. agric. Sci.* **45**, 156-163. [Abst. from author's summary.] 1486

Sulphanilamide, administered in the food to laying hens, caused a decrease in calcium retention and thin egg-shells. When the drug was withdrawn the egg-shells quickly regained normal thickness, but some time elapsed before normal body calcium metabolism was established. T. determined the Ca and P balance of the fowls, and calculated the amount of Ca combined with P, and the residual Ca in bone. He concluded that the effect of sulphanilamide on hens may be influenced by the season and by Ca and P intake.

BIXLER, W. B. (1954). **Pancreatic dornase in veterinary practice.**—*Vet. Med.* **49**, 506-508. [Abst. from author's summary.] 1487

B. studied the efficacy of pancreatic dornase [desoxyribonuclease] in the treatment of mucopurulent conditions, such as mastitis, abscesses, sinusitis, and otitis. It reduces the viscosity of mucopurulent exudate, facilitating its removal. It does not inhibit bacteria, and should be considered only as an aid to the treatment of infections associated with the formation of mucopurulent exudate.

WYNNE, K. (1954). **Compound F excretion in the sheep.**—*Aust. J. Sci.* **17**, 36-37. 1488

Sheep treated with A.C.T.H. excreted less than 50 μ g. Compound F (17-hydroxy-corticosterone-21-acetate) per 24 hours. The bile appeared to be the main route of excretion for Compound F during adrenocortical hyperactivity. The content was 600 μ g. per l. in the bile of a sheep dying of starvation, as com-

pared to 15 μ g. per l. in bile from a normal sheep.—R. L. REID.

STONER, H. B. & WHITELEY, H. J. (1954). **The effects of cortisone and corticotrophin on the human adrenal cortex.**—*Lancet*. **267**, 992-994. [Authors' summary slightly modified.] 1489

The authors described the histochemical appearance of the adrenal cortex in 4 patients who died under treatment with corticotrophin and in 3 who died under treatment with cortisone acetate; in the former treatment had led to hypertrophy and increased activity of the adrenal cortex; and in the latter to inactivity and atrophy. They discussed these changes in relation to the clinical use of these hormones.

DORFMAN, R. I. (1954). **Bioassay of steroid hormones.**—*Physiol. Rev.* **34**, 138-166. 1490

D. defined the actions of the four principal groups of steroids—the oestrogens, androgens, progestational substances and adrenocortical substances—and outlined the requirements of a standard bioassay for these substances, touching on the statistical calculations involved and the techniques used with a number of test animals.—A.S.

ELLIS, S., NODA, G., SIMPSON, M. E. & EVANS, H. M. (1954). **Purity of growth hormone prepared by different methods.**—*J. biol. Chem.* **209**, 779-787. 1491

An account of electrophoretic and constant solubility studies on growth hormone prepared by three different methods. The solubility of the hormone decreases sharply with a decrease of pH from 5.0 to 3.5 and the hormone is 30% precipitated from 0.1% solutions at pH 4.0 by 1.5 M. NaCl.—J. A. NICHOLSON.

EPLING, G. P. & RANKIN, A. D. (1954). **Metopon analgesia in the dog.**—*Amer. J. vet. Res.* **15**, 338-342. 1492

The optimum analgesic dose of methyldihydromorphine hydrochloride for the dog was 4 mg./kg. body wt. At this dosage, analgesia lasted for an average of 5½ hours. Dogs seemed to acquire a tolerance to the drug after repeated injections. The drug acted more rapidly, and its effect lasted longer, than morphine.—R.M.

HARRY, E. G. (1954). **The influence of certain chemico-physical characteristics of formaldehyde on its use as a disinfectant.**—*Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 217-222. [English and French summaries: pp. 42-43 of Summaries

of Section Papers.] [Author's summary modified.] **1493**

H. studied the influence of various factors on the persistence of atmospheric concentrations of formaldehyde vapour generated inside incubators from formalin and potassium permanganate. There was a significant lowering of conc. and consequent decrease in bactericidal activity as a result of diffusion, and also by aqueous absorption when water was present in humidity trays. This decrease was most marked during the initial stages of fumigation. Absorption on solid surfaces in the incubator also resulted in an initial drop in formaldehyde conc. but that which was adsorbed evaporated as the atmospheric conc. fell and thus tended to check further decrease. During the latter part of fumigation, the conc. of formaldehyde in the incubator was found to remain fairly constant.

The bactericidal efficiency of the vapour was increased by increasing the humidity of the material to be fumigated, but the accumulation of water on the surface to be sterilized should be avoided. Approximately 0.25 mg. of formaldehyde was adsorbed on to the surface of each egg after they had been fumigated. This did not persist long enough to have any bactericidal effect. It persisted on the surface of eggs in fumigated incubators, in progressively decreasing conc., over most of the incubation

period. H. considered that this may be a contributory cause to the toxicity of formaldehyde for embryos.

CLARENBURG, A. & ROMIJN, C. (1954). The effectiveness of fumigation with the formaldehyde-potassium permanganate and the influence on the hatchability.—*Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 214-217. [English and French summaries: p. 42 of Summaries of Section Papers.] [Authors' summary modified.] **1494**

The authors described experiments on the fumigation of hatching eggs, both in the incubator and in a separate cabinet under open air conditions, with relation to the bactericidal effect on *Salmonella bareilly*, and the influence on hatchability. With regard to the bactericidal effect, good results were obtained using 30 ml. formaldehyde with 20 g. potassium permanganate per cu. m., provided the eggs were perfectly clean. This concentration had no effect on the embryo at any stage of development. A pre-incubation storage over a long time at an insufficiently high temp. made the germinated eggs highly susceptible to the influence of formaldehyde vapour. Measurements of the ventilation of incubators proved that a fumigation for 30 min. with the fan at rest, with ventilation holes closed, and with the heating switched off, was adequate.

See also absts. 1265 (T.B.); 1270 (pullorum disease); 1274-1276 (foot rot); 1309-1310 (chronic respiratory disease); 1317-1319 (trypanosomiasis); 1321-1322 (coccidiosis); 1388 (sheep dips); 1391, 1398, 1412, 1413, 1415 & 1416 (anthelmintics); 1341-1432 (antibiotics in poultry nutrition); 1538 (aureomycin for retained placenta in the cow); 1549 report, Australia).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

ROMIJN, C. (1954). Development of heat regulation in the chick.—*Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 181-184. [English and French summaries: p. 36 of Summaries of Section Papers.] [Author's summary modified.] **1495**

R. discussed some aspects of energy equilibrium during foetal life. He investigated the influence of the cooling of incubated eggs on their respiratory metabolism and temperature by the continuous recording of O_2 intake, CO_2 elimination, and with thermoelectrical control of the temp. In the 15- and 16-day-old embryo heat production was directly proportional to changes in environmental temp. and the egg temp. Reversal in temp. after cooling was followed by increased heat production after a delay of 1-1½ hours in 2-week-old embryos and in foetuses near hatching. However, in the latter the decrease in heat production on cooling corresponded with a rise in

the respiratory quotient, indicating carbohydrate combustion in respiratory metabolism, possibly due to an increase of muscular tension.

In day-old, and 7-day-old chicks, changes in heat production corresponded with changes in environmental conditions. No delay was observed and the body temp. remained practically constant by the regulating mechanism of muscular movements.

MORENG, R. E. & BRYANT, R. L. (1954). Effects of sub-freezing temperature-exposure on the chicken embryo. I. Survival and subsequent growth up to time of hatch.—*Poult. Sci.* **33**, 855-863. [Authors' summary modified.] **1496**

Eggs containing embryos from 0-20 days of incubation were exposed to $-10^\circ F.$ for 70 to 125 min. The authors observed embryonic mortality at the time of exposure and during the incubation period following exposure. At various stages of development the embryo

differed substantially in its ability to withstand low temp. A high degree of resistance was observed in 1st, 2nd, and sometimes 3rd-day embryos. Susceptibility to the cold was greatest in embryos at the 18th, 19th, or 20th days.

Exposure to -10°F . for 125 min. killed all embryos in the majority of the age groups studied, while exposure for 70–90 min. had little effect on them. The cause of death was probably haemorrhage. The highest incidence of embryonic mortality following exposure was noted in the periods 1–6 and 13–19 days of incubation.

PRODI, G. & BAGGI, G. F. (1954). **Influence of photodynamic effects on diffusion in rabbit dermis.**—*Proc. Soc. exp. Biol., N.Y.* **86**, 862–865. [Authors' summary modified.] **1497**

As a result of exposure of areas of skin of rabbits to a 1,600 W. electric lamp placed at a distance of 15 cm. for 30 min., the authors observed a constant increase in the diffusion of Indian ink and diphtheria toxin inoculated into the dermis. They suggested that this increase indicated a modification of the ground substance of the dermal connective tissue, attributable to a photodynamic effect.

BENOIT, J., ASSENMACHER, I. & MANUEL, S. (1953). **Pénétration des radiations visibles jusqu'à l'encéphale à travers la région orbitaire, chez le canard. A travers la mesure par un procédé photographique. [Penetration of light through the orbital region to the brain in ducks.]**—*C. R. Soc. biol. Paris*, **147**, 40–44. **1498**

In experiments on the heads of five Pekin ducks the authors measured photographically the degree of penetration of light through the eye to the brain and also through the orbital region to the brain, the eye being closed. In the latter case, the amount of light reaching the brain was still appreciable, but only a fraction of that which can traverse the eye directly. The longer the wavelength, the greater the penetration, so that the proportional amounts of red, orange, yellow, green and violet light reaching the brain were 36.5, 10.5, 4.1, 2.4 and 1 respectively.—E.V.L.

EMERY, J. & McMILLAN, M. (1954). **Observations on the female sex chromatin in human epidermis and on the value of skin biopsy in determining sex.**—*J. Path. Bact.* **68**, 17–22. [Authors' summary modified.] **1499**

The authors examined samples of skin from human beings for the presence of the sex chromatin first described by Barr (1952). A

structure identified as the female sex chromatin was found in 25–54% of nuclei in biopsies from females and in 0.9% of nuclei from males. The two sexes are thus well distinguished. In P.M. material, sex was determined with certainty in about 80% of cases, and equivocal but not erroneous results were obtained in the remainder.

DALE, H. E. & BRODY, S. (1954). **The acid-base balance of dairy cattle in relation to the environmental temperature.**—*Proc. 90th Ann. Meet. Amer. vet. med. Ass. Toronto*, July 20–23, 1953, pp. 196–199. [Authors' summary modified.] **1500**

Dairy cattle exposed to high environmental temp. and varying light intensity developed alkalosis as a result of overventilation of the lungs. This condition is characterized by an increase in blood pH and a decrease in the carbon dioxide content of venous plasma. The conc. of ketone bodies in the blood or the excretion of ketone bodies in the urine showed no change that could account for a decrease in the alkaline reserve or in CO_2 -combining power.

DALE, H. E., GOBERDHAN, C. K. & BRODY, S. (1954). **A comparison of the effects of starvation and thermal stress on the acid-base balance of dairy cattle.**—*Amer. J. vet. Res.* **15**, 197–201. [Authors' summary and conclusions modified.] **1501**

Five days of starvation produced only slight changes in the concentration of the principal inorganic anions and cations in the plasma; but there were marked changes in the urinary excretion of these substances. The most significant changes were the decreased excretion of cations and carbonate and the increased excretion of phosphate. Distortion of the acid-base balance of the blood, characteristic of exposure to thermal stress, were not produced by starvation. Blood pH and bicarbonate content showed no significant change; but the conc. of total ketone bodies in the blood plasma and the excretion of total ketone bodies in the urine were increased, and the excretion of organic acids in the urine was decreased. These alterations do not result upon exposure to thermal stress.

MACADAM, I. (1954). **The effect on the milking cow of transport by lorry as shown by the total and differential cell counts of the milk.**—*Vet. Rec.* **66**, 612–614. **1502**

After the transport by lorry of 9 cows to an abattoir (neither distance travelled nor time taken being given), the cell count of milk from 28 out of 30 quarters was higher than before

the journey commenced: on the average the counts increased fivefold. M. believed that the increase in cell count of the milk could have been caused by mechanical agitation of udder tissue during transport.—R.M.

RUSOFF, L. L., JOHNSTON, J. E. & BRANTON, C. (1954). **Blood studies of breeding dairy bulls. I. Hematocrit, hemoglobin, plasma calcium, plasma inorganic phosphorus, alkaline phosphatase values, erythrocyte count, and leucocyte count.**—*J. Dairy Sci.* **37**, 30-36. 1503

Blood was withdrawn on three consecutive days each month for 12 months from 15 mature Jersey, Guernsey and Holstein bulls (5 of each breed) in Louisiana, U.S.A., and was examined after individual pooling of the 3-day samples.

There were highly significant differences between breeds, (a) in packed red cell volume, the mean values being: Guernsey 46.3%, Jersey 42.3%, Holstein 39.5%; (b) in alkaline phosphatase: Guernsey 2.95 units, Jersey 2.11 units, Holstein 1.49 units; and (c) in the leucocyte count: the mean values per cu.mm. being: Jersey $8,580 \pm 398$, Holstein $7,416 \pm 184$, Guernsey $6,444 \pm 139$. The differences between breeds in other blood values were not significant. There were highly significant differences between individuals in packed cell volume and leucocyte count and significant individual differences in alkaline phosphatase. There were significant seasonal differences in the packed cell volume, haemoglobin value and leucocyte count, these values increasing with the av. mean environmental temperature, and a decrease in alkaline phosphatase during September and October, when the mean max. environmental temp. was 93° and 82.4°F . respectively. The inorganic phosphorus level alone showed no seasonal differences.

—JOHN SEAMER.

DEUTSCH, H. F. (1954). **Fetuin: the mucoprotein of fetal calf serum.**—*J. biol. Chem.* **208**, 669-678. 1504

Electrophoretic and other studies show that fetuin prepared from 6 to 9 month foetal calf serum is a mucoprotein with a molecular weight near 45,000. It was found to be more labile than mucoproteins isolated from other systems. It is held in the foetal blood because of the complex placental structure which prevents its exchange with maternal blood, its accumulation being a reflexion of the proliferative processes of embryonic growth.

—J. A. NICHOLSON.

LAKI, K., KOMINZ, D. R., SYMONDS, P., LORAND, L. & SEEGER, W. H. (1954). **The amino acid composition of bovine prothrombin.**—*Arch. Biochem.* **49**, 276-282. 1505

Eighteen amino acids were present in bovine prothrombin. Those present in largest amounts were glutamic acid, aspartic acid, and arginine. There were no similarities between the amino acid composition of prothrombin and that of serum albumin.—R.M.

PRANKERD, T. A. J. & ALTMAN, K. I. (1954). **A study of the metabolism of phosphorus in mammalian red cells.**—*Biochem. J.* **58**, 622-633. [Authors' summary modified.] 1506

The authors studied the exchange of ^{32}P between various mammalian r.b.c. and their plasma, and the effects on this exchange of temperature, inhibitors of glycolysis, and various substrates. The exchange of ^{32}P was shown to be dependent on glycolysis: purine ribosides took part in this process. By means of paper chromatography of r.b.c. extracts, they studied the intracellular partition of ^{32}P , and found a precursor relationship between 2:3-diphosphoglyceric acid and adenosine triphosphate. They discussed the significance of this finding. They found glycolytic intermediates in the stromal fractions of r.b.c. and considered their possible significance.

GRUNSELL, C. S. (1955). **The marrow cells of normal sheep.**—*J. comp. Path.* **65**, 8-16. 1507

G. described the morphology of the marrow cells of the sheep. He classified the smears into 6 grades:—0, I, II, III, IV, and V, according to the density of cells within the walls of the syncytium, around the syncytium and along the edges of the smear. He gave an account of two methods for measuring marrow activity in samples obtained by sternal puncture.—F.E.W.

PALY, S. N. & KLINE, D. L. (1954). **The spontaneous proteolytic activity of dog blood.**—*Yale J. Biol. Med.* **26**, 486-490. [Authors' summary modified.] 1508

From studies of the inhibitory action of various substances on the proteolytic activity of dog blood and dog serum, and from other studies of their action on other substrates, the authors concluded that the proteolytic enzyme of dog serum is not plasmin. They suggested that the enzyme responsible for the proteolytic activity should be called Plasmin B.

HOUCK, C. R. (1954). Effect of splenectomy and blood cell transfusions on anemia in the chronic nephrectomized dog.—*Amer. J. Physiol.* **177**, 531-534. 1509

Neither splenectomy nor fortnightly transfusions of saline suspensions of r.b.c. from healthy dogs altered the severity of anaemia following nephrectomy in dogs. The bone marrow did not respond to the anaemia and there was no relationship between the anaemia and azotaemia in the high plasma non-protein nitrogen ranges observed.—JOHN SEAMER.

BUGARD, P., SOUVRAS, H., VALADE, P., COSTE, E. & SALLÉ, J. (1953). Réactions hématologiques chez des animaux soumis à l'action de bruits ou d'ultrasons intenses se propageant dans l'air. Etude des hématies. [Haematological effects in animals subjected to intense noise and to ultrasonic waves.]-C. R. Soc. Biol., Paris. **147**, 1733-1735. 1510

Seven dogs, 10 g. pigs and 38 rabbits were exposed to ultrasonic waves for periods varying from 4 min. to 4 hours and to intense noise of up to 135 db from aero engines, from 4 to 300 hours, but not exceeding 2 periods of 4 hours in one day. The sole observable effect on the blood was a slight, temporary anaemia of animals exposed to ultrasonic waves; intense noise in the audible range had no measurable effect.—E.V.L.

PREIBISCH, J. (1951). Wpływ pracy i zmęczenia na morfotyczne składniki krwi drobiu. [The influence of exercise and fatigue on the blood picture of the fowl.]-*Polish Arch. Vet.* **1**, 3-36. [English and Russian summaries.] 1511

P. tested the influence of fatigue on the blood picture in fowls. After one hour of exercise the leucocyte count dropped by 21.8% and the number of lymphocytes by 24%. After a rest period of 4 hours the leucocyte count returned to normal. For 12 days of continuous experiments the erythrocyte count remained normal. In blood of both rested and fatigued fowls the proportion of polychromatic erythrocytes to leucocytes was 1:700.

—J. R. MITCHELL.

RIGDON, R. H., CRASS, G. & MCCONNELL, K. P. (1953). Inhibition of maturation of duck erythrocytes by sodium selenite. The counteraction of this effect by cysteine.—*Arch. Path. (Lab. Med.)* **56**, 374-385. 1512

Sodium selenite reduces the percentage of reticulocytes in the peripheral blood of the duck and causes anaemia. Inhibition probably

occurs at the maturation of the endothelial cell to megaloblast. Cystein counteracts the effect. —F. R. PAULSEN.

ROLLINSON, D. H. L. (1954). A study of the distribution of acid and alkaline phosphatase in the genital tract of the zebu bull (*Bos indicus*).—*J. agric. Sci.* **45**, 173-178. [Author's summary modified.] 1513

R. determined by a histochemical method the localization of acid and alkaline glycerophosphatase throughout the genital system of the bull. Acid phosphatase was predominantly present in the nuclei of epithelial cells, and was also found in the distal portions of the cytoplasm of the epithelium lining the epididymis, ampulla of the vas deferens, and seminal vesicles. The presence of the enzyme in the testicle appeared to depend on the stage of activity of the seminiferous tubules.

Alkaline phosphatase was predominantly present in the basement membrane of cells and in capillaries throughout the system, and in the cytoplasm of the distal portions of cells lining the epididymis, ampulla of the vas deferens, and seminal vesicles. The only alkaline phosphatase activity in the prostate was in the capillary endothelium. The enzyme was present in the spermatogenic epithelium of the testicle, but not in the interstitial cells.

BAKER, R. & HUFFER, J. (1953). Electromyography in the normal, dilated, transected and transplanted ureter.—*Amer. J. Physiol.* **174**, 381-390. 1514

Electro-ureterograms obtained from adult dogs were irregular for the first 5 min. but later showed regular triphasic action potentials. In a few individuals diphasic waves occurred. Transection and reanastomosis produced no abnormalities except where dilation of the ureters resulted.—A. SEAMAN.

GROSS, J. (1954). Thyroid hormones.—*Brit. med. Bull.* **10**, 218-224. 1515

G. described his work, and that of other authors, on the chromatography of thyroid hormones, and discussed the application of the results to the physiology of the thyroid gland. [See also *V.B.* **22**, 1492 & **24**, 1671.]—R.M.

MARTIN, J. E., SKILLEN, R. G. & DEUBLER, M. J. (1954). The action of adrenocorticotrophic hormone on circulating eosinophils in dogs—a proposed screening method for evaluating adrenal cortical function.—*Amer. J. vet. Res.* **15**, 489-494. [Authors' summary modified.] 1516

The i/m injection of 5 to 50 I.U. of

adrenocorticotrophic hormone in normal dogs, or in dogs affected with diseases [not specified] in which there was presumably no adrenal cortical deficiency, resulted in 75–99% decrease in circulating eosinophiles within 7 hours. The authors suggested that the response of the circulating eosinophiles to the hormone may be used for evaluating the adrenal cortical reserve of dogs.

ESPERSEN, G. (1953). Cellulae conchales hos hest og aesel. Anatomiske undersøgelser. [The turbinate bones of the horse and donkey. An anatomical study.] — *Nord. VetMed.* 5, 573–608. [In Danish. English and German summaries. Abst. from summaries.] 1517

E. carried out a detailed investigation of the turbinate bones of 140 horses and 6 donkeys, and found a number of pneumatic sinuses not previously described. He described them in detail and proposed the collective name “cellulae conchales”. He also proposed names for structures within the “cellulae conchales”, and compared these structures in horses and donkeys.—A.S.

POMRIASKINSKY-KOBOZIEFF, N. & KOBZIEFF, N. (1954). Étude radiologique de l'aspect du squelette normal de la main du chien aux divers stades de son évolution, de la naissance à l'âge adulte. [Radiological study of the normal anatomy of the paw of the dog, from birth to adult age.]—*Rec. Méd. vét.* 130, 617–646. 1518

See also absts. 1556 (book, lipids of biochemical significance); 1557 (biochemistry of genetics).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

CAYTON, S. (1954). Symposium on human and animal sources of gastrointestinal infection. (b) Animal sources of food infection. — *R. sanit. Inst. J.* 74, 856–872. Discussion pp. 872–873. 1521

An outline of the path of infection, principally salmonella infection, from food animals to human food. C. emphasized that while “processing” of food has reached a high standard of bacteriological cleanliness, the actual slaughter and dressing of carcasses still leave much to be desired. Meat is rarely dressed under conditions that eliminate or even attempt to eliminate faecal contamination, and as cattle are known to “carry” dangerous salmonella organisms without showing symptoms, such contamination can cause infection in human beings. He also discussed poultry, eggs, and contamination of vegetable foods by dogs, cats, rats, and mice.—R. MACGREGOR.

The authors observed the process of ossification in the paw bones of ten puppies by means of frequent X-ray examinations. They gave the order of appearance of centres of ossification in the various bones.—A.S.

NIELSEN, S. W. & BISHOP, E. J. (1954). The duct system of the canine pancreas.—*Amer. J. vet. Res.* 15, 266–271. 1519

The pancreatic ducts of 50 dogs were injected P.M. with radio-opaque substances and examined by X-rays. In the pancreas of 42 dogs there were two duct openings into the duodenum, in 4 dogs there was only one opening, and in the remaining 4 dogs there were three openings. There were anastomoses between the ducts when two or more ducts were patent. The authors discussed the relationship of the anatomy of the duct system to the pathogenesis of pancreatitis.—R.M.

CRAGG, B. G., EVANS, D. H. L. & HAMLYN, L. H. (1954). The optic tectum of *Gallus domesticus*: a correlation of the electrical responses with the histological structure. — *J. Anat., Lond.* 88, 292–306. 1520

A study of the histological appearance and the electrical responses of the optic tectum in fowls suggests that there is a superficial layer of in-coming optic nerve fibres and a deep zone of efferent fibres with three main laminae intervening. The latter are made up of a superficial and deep plexiform layer with a radial layer in between.—J. A. NICHOLSON.

STOB, M., ANDREWS, F. N. & ZARROW, M. X. (1954). The detection of residual hormone in the meat of animals treated with synthetic estrogens. — *Amer. J. vet. Res.* 15, 319–322. 1522

The authors determined the oestrogen content of meat by weighing the uterus and by examining vaginal smears from ovariectomized mice which were fed the meat under test. Assay based on the weight of the uterus was 4 times more sensitive than the examination of vaginal smears. Residual hormone activity was detected in the carcass meat of 8 steers, 168 days after they had been given i/m injections or s/c implants of synthetic oestrogens, with or without progesterone.—R.M.

PIGOURY, L. & NIZZA, P. (1954). Radio-contamination des viandes et possibilités de récupération: cas particulier du radio-phos-

phore 32. [Radio-active contamination of meat and the possibility of salvage of affected meat, with particular reference to radio-active phosphorus.] — *Rec. Méd. vét.* **130**, 434-440. **1523**

Carcasses of rams rendered radio-active during life became safe after 3 months' cold storage, the viscera becoming decontaminated

See also absts. 1274 (S. bareilly in poultry and man); 1551 (report, Republic of Ireland).

REPRODUCTION AND REPRODUCTIVE DISORDERS

MCDONALD, R. J. (1954). **Developments in artificial breeding and related fields.**—*Canad. J. comp. Med.* **18**, 215-221. **1524**

The author discussed semen diluents and preservation of semen by freezing; the value of the method and problems associated with its use; the site of deposition of semen; and problems in infertility. He briefly discussed *Vibrio fetus* infection.—R. GWATKIN.

BARKER, C. A. V. (1954). **Low temperature preservation of bovine epididymal spermatozoa.**—*Canad. J. comp. Med.* **18**, 390-393. **1525**

In cases of sudden death, or slaughter of a bull for some reason other than infertility, B. suggested that recovery and freezing of ampullar or epididymal spermatozoa would be a logical procedure, especially where a selective breeding programme is being followed. He gave particulars of the method.—R. GWATKIN.

GUNN, R. M. C. (1951). **Cyclic changes in spermatogenesis in rams.** [Presidential address.]—*Rep. Aust. Ass. Adv. Sci.* **28**, 89-101. **1526**

In his Presidential Address to Section L: Veterinary Science, of the Australian and New Zealand Association for the Advancement of Science, G. discussed fertility in rams, with special reference to the causes of cyclic changes in spermatogenesis. He dealt especially with the effects of climatic conditions, particularly temperature, the thyroid, diet and light and gave a number of figures illustrating experimental investigations in Australia. He discussed biological aspects of the cyclic changes.

—H. McL. GORDON.

SCHINCKEL, P. G. (1954). **The effect of the ram on the incidence and occurrence of oestrus in ewes.**—*Aust. vet. J.* **30**, 189-195. **1527**

The presence of the ram when introduced to ewes at the start of the breeding season acts as an exteroceptive stimulus to reproductive activity. The stimulus only appears to be operative during the transition period from the

more quickly than the bones and musculature. Living animals remain radio-active for a longer period. Rats fed on radio-active meat showed a marked increase in reticulocytes and granulocytes and a loss of 10-17% body weight but no other symptoms. Radio-active sheep developed bacteraemia of Gram-positive cocci and coliform organisms.—R. MACGREGOR.

—A. W. BLACKSHAW.

BLACKSHAW, A. W. (1954). **The prevention of temperature shock of bull and ram semen.**—*Aust. J. biol. Sci.* **7**, 573-582. [Author's summary slightly modified.] **1528**

The decreased vitality of ram and bull spermatozoa caused by sudden cooling (cold shock) may be largely prevented by the presence of egg yolk in the diluent. The activity of egg yolk in this respect lies in the alcohol-soluble, acetone-insoluble fraction. The phospholipoid lecithin may be isolated from this and will prevent cold shock in concentrations as low as 0.12%.

The protective action of lecithin for ram spermatozoa is greater at pH 6.5 than at a neutral or alkaline pH.

ROTHSCHILD & BARNES, H. (1954). **Constituents of bull seminal plasma.**—*J. exp. Biol.* **31**, 561-572. [Authors' summary slightly modified.] **1529**

The authors examined the concentrations of the main inorganic and certain organic constituents of bull seminal plasma. The average concentrations, in mg./100 ml., were:—sodium 258; chloride 175; potassium 172; citrate 620; calcium 37; fructose 460; magnesium 8; total nitrogen 877; iron 2; total phosphorus 57. Sodium and potassium were found to be inversely correlated, $r = -0.86$, $p < 0.001$.

Calcium, chloride, fructose, citrate and total nitrogen were also strongly correlated ($p < 0.001$), in such a way that a knowledge of the concentration of any one of the constituents enabled the average concentration of the other four in the sample to be predicted with considerable accuracy.

Sodium, potassium and chloride were estimated by standard chemical methods and with the flame photometer (sodium and potassium)

and by electrometric titration (chloride). They examined and discussed the applicability of the alternative methods of estimation, which require very small quantities of seminal plasma.

The freezing-point depression, Δ , of bull seminal plasma was -0.533 , standard error of mean, 0.005 .

The Δ values of a number of laboratory and field diluents were also examined; with two exceptions they were found to vary markedly from Δ for bull seminal plasma.

WHITE, I. G. (1954). **The effect of some seminal constituents and related substances on diluted mammalian spermatozoa.**—*Aust. J. biol. Sci.* **7**, 379-390. **1530**

Trace concentrations of copper, cobalt, manganese, iron and zinc had little effect on ram, bull or rabbit spermatozoa, except that copper depressed the motility of ram spermatozoa. Biotin improved the viability of diluted spermatozoa of the bull but not of the ram and rabbit. A variety of other vitamins were inactive.

None of the 21 amino-acids tested had any beneficial action on diluted ram, bull or rabbit spermatozoa, and some were toxic.

Human spermatozoa were very susceptible to dilution and no protective action was shown by substances that were beneficial to other mammalian spermatozoa.—A. W. BLACKSHAW.

FREUND, J., LIPTON, M. M. & THOMPSON, G. E. (1954). **Impairment of spermatogenesis in the rat after cutaneous injection of testicular suspension with complete adjuvants.**—*Proc. Soc. exp. Biol., N.Y.* **87**, 408-411. [Authors' summary modified.] **1531**

The authors produced impairment of spermatogenesis in 19 out of 29 albino rats by repeated s/c injections of a suspension of rat testis combined with liquid paraffin and killed mycobacteria. The sites of injection were at the nape of the neck or in the lumbar region. The germinal cells alone were affected: the Leydig cells, seminal vesicles and prostate remained unaffected. In control rats, injected with suspensions of liver or kidney tissue instead of testicular tissue, spermatogenesis was not affected. With severe injury, large multinucleated cells sometimes appeared in the seminiferous tubules.

BRADEN, A. W. H., AUSTIN, C. R. & DAVID, H. A. (1954). **The reaction of the zona pellucida to sperm penetration.**—*Aust. J. biol. Sci.* **7**, 391-409. **1532**

The proportion of eggs penetrated by spermatozoa in the rat and mouse is very high,

but the number of eggs containing more than one spermatozoon (about 20%) is much smaller than would be expected if the penetration of the zona pellucida were determined by chance alone. This was interpreted to mean that the penetrability of the zona pellucida to spermatozoa decreases after the entry of the first spermatozoon. The block to penetration appears to be propagated through the zona, as in most eggs containing two spermatozoa the points of entry are in opposite hemispheres. The time for completion of the zona reaction is from 10 min. to $1\frac{1}{2}$ -2 hours. A similar block appears to occur in the eggs of the sheep and dog but not in those of the rabbit.

—A. W. BLACKSHAW.

SAGER, F. C. (1953). **Breeding problems of Thoroughbreds.**—*Proc. 56th Ann. Meet. U.S. live Stk sanit. Ass.* pp. 52-60. **1533**

A clinical account of some common problems associated with reproduction in the mare and stallion.—R.M.

ROBERTS, M. (1954). **The effect of a histaminase-inhibitor (aminoguanidine) on pregnancy in the rat.**—*J. Endocrin.* **11**, 338-343. [Author's summary modified.] **1534**

R. showed that aminoguanidine sulphate can inhibit the histaminase of rat placental extracts *in vitro*, and that, given s/c, it can also inhibit *in vivo* the placental and uterine histaminase of pregnant rats. When the drug was given s/c to pregnant rats in doses producing more than about 50% inhibition of the maternal placental histaminase there was a general disturbance of the course of pregnancy. The foetuses were more sensitive than the dam. R. considered these results to provide evidence that the great increase of placental and uterine histaminase during pregnancy in rats plays an important part in maintaining pregnancy and bringing it to a successful conclusion.

ALLISON, R. M. (1954). **Reduced maintenance of frogs used for pregnancy diagnosis by enforced hibernation.**—*J. Endocrin.* **11**, 377-379. [Author's summary modified.] **1535**

The author described a method for inducing hibernation in frogs (*Rana esculenta*) used in pregnancy diagnosis tests. Fifty males were stored in a domestic refrigerator; 20 were removed after 5 months, and 30 after 7 months. All survived and were healthy. When the frogs' urine was examined after the injection of 1 ml. of untreated pregnancy urine, known to contain between 8 and 16 I.U. of chorionic gonadotrophin, it was found that all 50 animals had shed uncountable numbers of

spermatozoa. He suggested that this method of storage was suitable for frogs used for pregnancy diagnosis as well as those used for dissection and physiological experiments.

ROBINSON, T. J. (1954). **Problems involved in the induction of pregnancy in the sheep during anoestrus.**—*J. Aust. Inst. agric. Sci.* **20**, 203-213. 1536

R. discussed work on the control of ovulation and oestrus in the ewe and, briefly, semen production in the ram. Ovulation without oestrus may be readily produced by the injection of pregnant mare's serum (P.M.S.), but oestrus appears to be under a dual progesterone-oestrogen control.

During anoestrus the injection of progesterone over a period of several days, followed by P.M.S., results in oestrus and ovulation within 48 hours of the injection of the gonadotrophin. Further cycles do not appear and the fertility is low.

Successful control of semen production by hormones appears to have been shown only by the use of thyroxine to increase sex drive and semen quality during the summer months.

—A. W. BLACKSHAW.

KIRKHAM, W. R. & TURNER, C. W. (1954). **Induction of mammary growth in rats by estrogen and progesterone.**—*Proc. Soc. exp. Biol., N.Y.* **87**, 139-141. [Authors' summary modified.] 1537

The administration of oestrogen and progesterone to castrated female rats for 15 days or more stimulated an increase of deoxyribonucleic acid (DNA) in the mammary gland comparable to that found at a corresponding period of pregnancy. Continued injection of these hormones for periods up to 32 days increased only slightly the DNA content. The authors interpreted this to mean that there was no further proliferation of the gland even in the presence of these hormones. In the hormone-stimulated glands the pentosenucleic acid content increased as in pregnancy, but since profuse lactation was not stimulated the increase was not comparable to that in the latter stages of pregnancy or lactation. However, when the hormones were administered for 26 days and then withdrawn, the induced lactation was sufficient to nourish foster litters of rats.

EASTERBROOKS, H. L. & PLASTRIDGE, W. N. (1955). **Aureomycin for retained placenta in the cow.**—*J. Amer. vet. med. Ass.* **125**, 21-22. [Authors' summary modified.] 1538

When 31 dairy cows with retention of the placenta were treated with aureomycin by the

insertion of a tablet into the uterus every 48 hours until expulsion of the placenta occurred naturally, their reproductive efficiency was as high as that of a group of 39 companion dairy cattle which calved normally. In three other herds where this practice was tried on at least another 30 cows, the results were reported as highly favourable by the herd owners, though no detailed records were available. In one case a placenta was retained for 19 days. Treated as described, this animal conceived after one service.

In the former group of 31 animals, only 2 showed evidence of septic metritis and both responded to intravenous injections of sulphadimidine sodium. Pyometra was not observed.

In the circumstances the authors considered that manual removal of the placenta is inadvisable.

NOODER, H. J. (1954). **Chronische endometritis bij honden en haar chirurgische behandeling. [Chronic endometritis in bitches, and its treatment by hysterectomy.]**—*Tijdschr. Diergeneesk.* **79**, 852-869. [English, French and German summaries.] 1539

Hysterectomy was performed in 564 bitches affected with endometritis; 426 recovered. Application of penicillin (100,000 units i/p and 100,000 units i/m) is advisable. N. considers hysterectomy to be the treatment of choice in such cases and that it is justified by the large percentage of recoveries.

—C. A. VAN DORSSEN.

RESSANG, A. (1954). **Steriliteit bij de merrie. (Een klinisch, bacteriologisch en histopathologisch onderzoek.) [Sterility in mares. (A clinical, bacteriological and histopathological investigation.)]**—*Thesis, Utrecht*, pp. 203. [English, French, German and Indonesian summaries.] 1540

R. examined histologically and bacteriologically 327 uterine biopsy specimens from 153 non-fertile mares. In 106 cases both methods yielded positive results and in 119 both gave negative results. In 61 cases in which endometritis was confirmed histologically no micro-organisms were cultured and in the remaining 41 cases cultures were obtained from histologically negative specimens. R. stated that *Streptococcus zooepidemicus* is the most important cause of sterility in mares in Holland.

—C. A. VAN DORSSEN.

MILLER, S. J. & MOULE, G. R. (1954). **Clinical observations on the reproductive organs of Merino rams in pastoral Queensland.**—*Aust. vet. J.* **30**, 353-363. 1541

Of 16,665 Merino rams examined 10.7% had clinical abnormalities of the reproductive organs: epididymitis accounted for more than half the lesions. There was a correlation between the age of the rams and the occurrence of clinical abnormalities which were shown also to impair fertility. The authors suggested that some forms of epididymitis are spread venereally. They discussed certain clinical and pathological aspects of abnormalities and suggested management practices to limit their occurrence.—L. E. A. SYMONS.

See also absts. 1276-1283 (brucellosis); 1285 (leptospirosis); 1291-1293 (V. fetus); 1305 abortion in cattle associated with *Nocardia*; 1418 (seminoma of the ovary in a cow); 1557 (book, biochemistry of genetics).

WILKINSON, W. S., POPE, A. L., PHILLIPS, P. H. & CASIDA, L. E. (1954). The influence of diethylstilbestrol on certain blood and liver constituents of lambs.—*J. Anim. Sci.* 13, 684-693. 1542

The effect of diethylstilboestrol on metabolism is not known: examination of blood samples withdrawn twice daily from treated and control lambs revealed lower haematocrit and higher fibrinogen, liver dry-matter and liver and plasma cholesterol values in the former group, as well as diurnal variation.

—JOHN SEAMER.

ZOOTECHNY

PACHECO JORDÃO, L., XAVIER DE CAMARGO, M. & FURTADO GOUVEIA, P. (1952). Eficiência, na reprodução, do plantel P. S. Inglês da Coudelaria Paulista. [Breeding efficiency of Thoroughbred horses in Brazil.] — *Bol. Indust. anim.* 13, 7-62. [English summary and conclusions.] 1543

A report on the breeding efficiency of 258 pure English Thoroughbred mares observed at Colina over the period 1937-39. Sixteen stallions were used, of which one was Arab, one Anglo-Arab, two Trakehnen, one Hackney and the remaining 11 English Thoroughbreds. —A.S.

SKALLER, F. & SHELDON, B. L. (1955). Interactions of genotypes and environment in determining sexual maturity in the domestic fowl. — *Aust. J. agric. Res.* 6, 171-185. [Authors' summary slightly modified.] 1544

Sexual maturity data of 1,762 pullets from 4 differently bred flocks were examined for interaction between genotype for age at sexual maturity and the environment as represented by different hatching dates.

Interaction was significant in two of the flocks studied and there was some interaction, though not significant, in the other flocks. Progressively later hatching caused significant increases in age at maturity in all flocks, but large differences in sexual maturity between sire families did not occur.

The authors discussed the occurrence of interaction in other flocks and its effects on current poultry breeding methods. They concluded that interactions of the order of those reported in this paper are not of a sufficient magnitude to warrant revision of present methods.

TECHNIQUE AND APPARATUS

VALENTINE, R. C. & BRADFIELD, J. R. G. (1954). The urea method for bacterial viability counts with the electron microscope and its relation to other viability counting methods. — *J. gen. Microbiol.* 11, 349-357. 1545

The authors described a method for estimating the number of live bacteria in a small sample, based on the fact that urea inhibits the division of certain bacteria without preventing growth. In a mixed sample of live and dead bacteria, therefore, the living bacteria are easily recognized by their greater size. Such counts are readily carried out with the aid of the electron microscope. This method gave accurate results, and the authors discussed its advantages over colony-counting methods, as

well as the significance of various interesting differences in the counts given by the two methods.—A.S.

BLACKSHAW, A. W. (1954). Preservation of rabbit, sheep and ox red cells at -79°C . — *Aust. J. biol. Sci.* 7, 566-572. [Author's summary slightly modified.] 1546

Observations made on the freezing of r.b.c. at -79°C . showed that equilibration of the cells with a glycerol diluent reduces the amount of haemolysis in rabbit blood but increases it in sheep and ox blood. When ethylene glycol is substituted for glycerol, no effect of equilibration is detectable in rabbit blood, but haemolysis is increased in sheep and ox blood.

The addition of arabinose to the glycerol or ethylene glycol diluents reduces haemolysis after freezing with sheep and ox blood, but on rabbit blood it has no effect with glycerol and increases the haemolysis when used with ethylene glycol.

B. discussed possible modes of action of these substances.

See also absts. 1253 (new technique for study of bacterial L forms); 1329-1331 (F. & M. disease virus); 1351 (electrophoresis of E.I.A. serum); 1352 (cultivation of equine abortion virus); 1370 (cultivation of viruses); 1393 (collection of large numbers of paramphistome metacercariae).

ANON. (1953). *The fundamentals of radiography*. pp. 100. Rochester, N.Y.: Medical Division, Eastman Kodak Co.; London: Kodak Ltd. 8th Edit. 1547

A richly illustrated description of X-ray techniques and apparatus with details on exposure, processing, handling of materials and safety measures to be observed.—E.G.

REPORTS

GREAT BRITAIN. ISLE OF MAN. (1954). *Annual report of the Government Veterinary Officer for the year ended 31st March, 1954*. [KER-
RUISH, D. W.].—*Manx J. Agric.* 9, 25 & 27-29. 1548

The all-round decrease in the incidence of TUBERCULOSIS reported in previous years continued. Twenty-six cases of JOHNE'S DISEASE, diagnosed clinically, were confirmed by laboratory examination and slaughtered. CONTAGIOUS ABORTION was diagnosed serologically in a number of animals (most of them imported) and compulsory vaccinations were carried out under the Epizootic Abortion Order, 1944. Artificial inseminations and activities under the Milk (Special Designations) Order, 1945, and the Attested Herd Scheme were carried out.—T. E. GATT RUTTER.

AUSTRALIA. (1953). *Fifth annual report of the Commonwealth Scientific and Industrial Research Organization for the year ending 30th June, 1953*. pp. 191. Canberra: L. F. Johnston, Commonwealth Govt. Printer. 11s. 1549

Studies on MASTITIS were limited to testing antibiotics against staphylococcal infections. Neither intensified aureomycin treatment, procaine penicillin plus 5-amino acridine, furacin, terramycin nor neomycin was satisfactory.

Methods of control practised against CASEOUS LYMPHADENITIS in sheep, including vaccination and grazing newly shorn sheep in rested paddocks, proved of limited value. Some equine strains of *Corynebacterium* show promise for the development of vaccines. Strains which were toxic when injected subcutaneously were safely given intradermally. When ovine strains are given i/d, infections are established in regional lymph nodes more consistently than from contamination of wounds or s/c injection.

In preliminary studies on SHEATH ROT (BALANITIS) of wethers, tablets of hexoestrol were implanted in the subcutaneous tissues. All of the wethers developed characteristic

urogenital lesions which did not resemble those of SHEATH ROT.

Haemophilus bovis was isolated from cases of bovine OPTHALMIA and the disease was transmitted to healthy cattle by instillation of the organism into the conjunctival sac. Experimentally infected cattle harboured the organism for some months (end-point not determined) and excreted it in nasal secretion, suggesting that infection may be transmitted by droplets in sneezing and snorting. In transmission experiments to sheep, rabbits, g. pigs and mice only the latter were infected. Treatment of early cases in cattle with ointment containing 1.0% chloramphenicol was successful.

Calfhood vaccination with *Brucella abortus* Strain 19 conferred protection against BRUCELLOSIS up to the end of the fourth year. There was no statistical difference between groups vaccinated once or twice.

A *Br. abortus*-like organism was isolated from rams affected with EPIDIDYMITIS.

Further studies have begun on FOOT ROT in sheep. *Fusiformis nodosus* is readily destroyed by bactericidal compounds provided lesions are adequately exposed by paring. Inadequate paring of affected feet before treatment appears to be the chief reason for failure to control the disease.

The standard vaccine for BOVINE CONTAGIOUS PLEURO-PNEUMONIA may be preserved for at least 27 months by lyophilization. Trials emphasized the risks of vaccinating young calves. Serious ill-effects were recorded in animals vaccinated when 20-30 days old. A rapid whole-blood slide agglutination test has been applied to many hundreds of cattle with success. Chloramphenicol did not give encouraging results for treatment.

A survey of the coccidia in sheep revealed the presence of *Eimeria arloingi*, *E. parva*, *E. nina kohl yakimovi*, *E. faurei*, *E. crandallis* and *E. ah-sa-ta*.

Populations of the face louse (*Linognathus setosus*) increase in winter and reach a peak in spring. When the numbers are low during summer, the lice are confined to the face. If dipping is carried out thoroughly with special attention to the head benzene hexachloride (B.H.C.) is very effective.

Infestations with *Damalinia ovis* in sheep carrying nine months' growth of wool were controlled by spraying, with pressure to saturate the fleece, a strip from poll to tail along the back and extending to about midway down the sides. Approximately half a gal. of B.H.C. at four times the normal dipping concentration was used for each sheep. A clinical case of *Demodex ovis* infestation was seen.

Infestation of horses with larval *Boophilus microplus* may produce lesions resembling those of ALLERGIC DERMATITIS (QUEENSLAND ITCH), which is usually caused by the bites of species of *Culicoides*. Regular spraying with D.D.T. prevented, and anti-histamine drugs alleviated, the latter condition. Studies on *B. microplus* revealed that there is an inherent natural resistance and a resistance associated with an allergic reaction, the development of which depends on the number of ticks and the intervals between infestations with larvae. In hypersensitive cattle the infestation is considerably decreased, mainly on account of losses in the larval stage.

Loss of efficiency of B.H.C. was shown to be related to selective depletion of the γ -isomer. The dehydrohalogenation method of estimating the B.H.C. content of dipping fluids is therefore of little value for it determines total B.H.C. and the γ -isomer content cannot be derived from this figure. Chromatography is satisfactory but time-consuming.

The fifth generation of B.H.C.-resistant ticks still retains a high degree of resistance. The strain is also resistant to arsenic and toxaphene, and slightly resistant to D.D.T.

In field trials dieldrin appears to be an outstanding insecticide against ticks. At a conc. of 0.2%, mortality was 100% and cattle were protected for about 12 days. Chlordane was less effective than dieldrin, but toxaphene at 0.25 and 0.5% was highly effective. Observations on "resistant" cattle in the field showed that although large numbers of larvae may attach, few reach maturity. Susceptibility was not related to skin thickness or hairiness, but was due to a skin reaction. Ants appear to play a role in determining the distribution of ticks in pastures and may be respon-

sible for the extremely low populations noted in some so-called "tick-free" areas.

There was little evidence that zebu and Afrikaner strains of cattle were less susceptible than Herefords to infestation and tick worry due to *B. microplus*.

Studies are in progress on the toxins of *B. microplus*, *Haemaphysalis bispinosa*, *Argas persicus*, *Rhipicephalus sanguineus*, *Ornithodoros gurneyi* and *Ixodes holocyclus*. Some cross-immunity reactions have been demonstrated by complement-fixation tests between *B. microplus* and *H. bispinosa*. The geographical range of *I. holocyclus* has been extended into northern Victoria.

The cercariae of the amphistomes of cattle are readily attracted to yellow light, and can be thus induced to encyst on prepared surfaces, thereby facilitating the collection of cercariae for experimental purposes. No symptoms were seen in a calf given 30,000 cercariae of *Paramphistomum ichikawai*. The flukes matured in 30 days and at P.M. examination 80 days after dosage, 6,000 adults were recovered. A second calf dosed with 130,000 cercariae failed to develop symptoms, and when it was slaughtered 12 days after dosage, 5,000 immature flukes were recovered from the small intestine. A new technique is being developed for counting trematode eggs in cattle faeces.

The intermediate host of *Fasciola hepatica* has been identified, in all of the mainland States, as *Simulium subaqualis*. The sodium and copper salts of pentachlorophenol showed considerable promise as molluscicides.

Studies on the epidemiology of PARASITIC GASTRO-ENTERITIS of cattle were continued in Queensland. Some of the highest egg counts yet recorded included 6,000 eggs per g. for *Haemonchus contortus* and 59,000 e.p.g. for *Cooperia punctata* and *C. pectinata*. Studies on the relationship between live-weight, age and faecal output, have provided correction factors for comparison of egg counts in animals of different ages. The correction factors are given.

Morphological differences in adults and larvae indicated that sheep and cattle strains of *H. contortus* are distinct species.

Studies on phenothiazine showed that if particle size exceeds 25-30 μ , anthelmintic efficiency declines.

In studies on the mode of action of phenothiazine, 30 related compounds have been prepared and tested against *Syphacia obvelata* in mice. There appears to be a region of maximum anthelmintic activity in compounds having

oxidation-reduction potentials between +600 and +800 mV. Of a number of diphenylamines, only 4,4-dimethyldiphenylamine was effective. It was effective against *H. contortus* in sheep in 10 g. doses and was toxic when an 18 g. dose was given.

These studies suggested that the anthelmintic effect of phenothiazine may result from its ability to form relatively stable semiquinones. Certain quinones cause purgation in sheep and it was thought that this may enhance the efficiency of phenothiazine by carrying the drug through the upper parts of the alimentary canal more rapidly and thus reaching large bowel parasites sooner and in higher concentration.

Fast and slow administration of anthelmintics to sheep had different effects on the oesophageal groove reflex. The preparation used contained 5% copper sulphate soln. In the slow method a few ml. of the drench were injected into the mouth and about 3-5 sec. later the remaining 25-30 ml. of the dose were injected. In sheep drenched in this way, the dose reached the abomasum in 13 out of 14 sheep. When the drench was injected as a single dose, as fast as the sheep could swallow, it reached the abomasum in only 5 out of 12 sheep, passing into the rumen and thereby being ineffective in the other 7 sheep. The short oesophageal tube devised for administration of phenothiazine can be used for other anthelmintics provided the oesophageal groove reflex is "stimulated" before passing the tube by swabbing the mouth with a 5% soln. of copper sulphate.

The development and degree of resistance to TRICHOSTRONGYLOSIS is influenced by the number of larvae administered and the frequency of administration. Doses of 1,000-2,500 larvae once or twice weekly were more effective than monthly doses of 20,000 larvae.

Serological tests on young sheep on natural and improved sown pastures showed that positive reactions were more numerous and enduring among sheep grazing the improved pastures. In the field it was shown that administration of larvae of *H. contortus* may stimulate development of resistance.

Resistance to *H. contortus* is not dependent on the allergic phenomena associated with the "self-cure" reaction, and there was no rise in blood histamine in resistant sheep following massive doses of infective larvae. The occurrence of "self-cure" was not associated with change in pH of abomasal contents. An established infestation was not affected by con-

tinuous i/v injection of histamine (9 mg. in 7 hours), nor by increase in the level of blood histamine induced by "compound 48/80" (a synthetic histamine-releasing agent). A decline in egg count induced by the i/v injection of *Salmonella typhi-murium* in a sheep infested with *H. contortus* was not associated with an increase in blood histamine.

The ability of young sheep to resist a fresh infestation with species of *Trichostrongylus* was not impaired by drenching with phenothiazine.

In Tasmania, *Trichostrongylus* spp. and *Ostertagia* spp. increase in late spring and early summer and again in late summer and autumn. There may be increasing worm burdens in winter associated with a low plane of nutrition. In Western Australia, worm burdens increased in late winter and early spring and again in early autumn. Heavy infestations were associated with reduced body and fleece weights and deterioration in fleece quality with coting of the wool. In southern N.S.W. infestations increased during spring and remained moderately heavy during the summer. A rapid decline after autumn rains appeared to be due to "self-cure".

In northern N.S.W. a comparison was made of changes in worm burden of sheep grazing natural and improved sown pastures. In general, infestations with *Oes. columbianum* and *H. contortus* were heavier on natural pastures, but *Trichostrongylus* spp. infestations were at low and comparable levels on both types of pastures.

Further studies confirmed the effect of ingestion of a grazing crop of oats on *Oes. columbianum*. Sheep grazing the oats began to pass the worms soon afterwards. Passage of the worms was associated with softening of the faeces, which showed a lowering of pH. Sheep grazing highly improved sown pastures, passed a few worms only. The high nutritive value of the oat crop *per se* does not appear to be the important factor in removing the worms.

Studies on the histotropic phase in the life-cycle of *Ostertagia* spp. in sheep showed that the infective larvae enter the gastric pits and glands in the pyloric and cardiac regions between 72 and 96 hours after administration. Developing worms may leave the mucosa quickly or remain there for periods exceeding three months. Some develop into adults before leaving the mucosa.

Trichostrongylus rugatus was found in calves. An index of *Cooperia* spp. has been prepared.

Studies on the bionomics of the free-living stages of nematode parasites of sheep were begun at the Regional Laboratory at Armidale. Faeces were exposed under a variety of conditions and the microclimate was measured and compared with Stephenson screen records. There was a more continuous production of infective larvae from faeces protected by dense pasture. "Mass hatching" of the eggs of species of *Trichostrongylus* was observed, depending on rainfall. Eggs of *H. contortus* did not show this phenomenon.

Nutritional studies included a survey of the copper content of the blood and liver of sheep and other animals, not necessarily domesticated animals, in Western Australia, vitamin B₁₂ and haemopoiesis, processes of rumination (passage of starch from the rumen to the abomasum, functions of the omasum) and insulin hypoglycaemia in ruminants.

In the course of investigations on PREGNANCY TOXAEMIA of ewes, it was shown that there is a breakdown in the Krebs tricarboxylic acid cycle when pregnant ewes are fasted. Estimations of blood glucose, ketones, lower fatty acids and citric acid in ewes manifesting clinical signs indistinguishable from toxæmia of pregnancy revealed no consistent differences from values obtained from fasted pregnant ewes which were clinically normal.

Studies on "WHEAT POISONING" in sheep showed that the effect of introducing fermented wheat mash into the duodenum is more severe than that of lactic acid solution and that although lactic acid can be absorbed directly from the rumen, the amounts so absorbed do not appear sufficient to produce severe effects.

In the study of COBALT DEFICIENCY in sheep, microbiological estimations of vitamin B₁₂ are complicated, when using *Bact. coli* and *Lactobacillus leichmannii*, by the presence of related compounds. However, the use of a chlorophyll-bearing flagellate, *Ochromonas malhanensis*, has overcome the difficulty. The potency of the vitamin is increased over 100-fold if it is injected intramuscularly rather than if given in a drench or in food. When the cobalt content of the ration is decreased below a critical level, the fall in the rate of production of "vitamin B₁₂ activity" in the rumen contents is rapid, but the symptoms of the deficiency appear only after the reserves of vitamin B₁₂ become depleted, usually after several months. Sheep in an extreme state of COBALT DEFICIENCY respond dramatically to intramuscular injections of vitamin B₁₂ without any alteration in the rate of production of

the vitamin in the rumen. In sheep which have developed severe COBALT DEFICIENCY naturally, injection of 100 µg. of vitamin B₁₂ intramuscularly thrice weekly will rapidly restore normal health. Injections of 50 µg. once or thrice weekly will maintain sheep in good health indefinitely while grazing pastures deficient in cobalt. After establishing a high vitamin B₁₂ status in this way mature sheep remained healthy for six months, whereas similar sheep which had been drenched thrice weekly with the equivalent of 1 mg. Co/day remained healthy for only three months after treatment ceased. Massive doses of Co at monthly intervals may maintain health in mature ewes, but lambs suffer if not drenched more frequently. Part of the comprehensive study on vitamin B₁₂ and haemopoiesis includes the influence of the vitamin on formation of protoporphyrin which is higher than normal in the red cells of cobalt-deficient sheep.

Molybdenum has little effect in interfering with the passage of copper through the placenta to the lamb. Copper-deficient sheep store large amounts of functionally inert iron which is, however, rapidly utilized on resumption of normal copper status.

In studies on TOXAEMIA JAUNDICE the metabolism of copper has been investigated. The "fraction" in lucerne chaff which influenced the storage of copper proved to be inorganic sulphate. Neither molybdenum nor inorganic sulphate alone limited the storage of copper in the liver; but together they prevented storage of copper and at appropriate doses caused loss of copper from the liver. The influence of grazing *Heliotropium europæum* on liver damage was studied in crossbred and Merino sheep. The latter were more resistant, and the copper status of their liver was not affected. Drenching with 100 mg. Mo/day did not reduce the copper content of the liver in crossbred sheep and there were no ill-effects after 2½ years of this treatment. However, it may not be safe to give sheep this amount of Mo in an environment which provides a higher intake of inorganic sulphate. The toxic doses of the alkaloids heliotrine and lasiocarpine have been worked out in rats. Lasiocarpine is the more acutely toxic, but small repeated doses of heliotrine produce hepatitis closely resembling the disease in sheep.

Studies on SILICA CALCULI in wethers in Western Australia showed that the silica content of urine varied widely in sheep (24 mg. to 320 mg. SiO₂/ml).

Work on HAEMATURIA VESICALIS included estimation of aminophenolic compounds in the

urine and an examination of the hypothesis that *o*-amino phenols may be the immediate cause of bladder lesions in cows.

A continuation of the work on FLUOROSIS in sheep drinking water from certain bores showed that concentrations as high as 20 p.p.m. fluoride had no untoward effects on health, productivity or reproductive capacity of mature ewes. Experiments on lambs born to ewes which had drunk water containing 20 p.p.m. during gestation and subsequently maintained under these conditions until they were three years old, showed that while there were changes in the teeth (mottling, selective wear of molars) there were no adverse effects on health and productivity.

"PHALARIS STAGGERS" in sheep grazing *Ph. tuberosa* was prevented by weekly drenching with 7 mg. Co. Monthly doses of 280 mg. had no protective effects. Spraying pasture with cobalt sulphate shows promise in controlling the disease.

Rabbits that had recovered from MYXOMATOSIS appeared in many districts, and in several areas evidence of a markedly reduced case-mortality rate was obtained. It is believed that a strain of lowered virulence has appeared. In some of the drier areas, the identity of the insect vectors remains in doubt, but mosquitoes, sandflies (*Simuliidae* and *Ceratopogonidae*) and stickfast fleas (*Echidnophaga* spp.) may all play a part. Over an extensive area spring activity of MYXOMATOSIS was correlated with the prevalence of simuliids, chiefly *Austrosimulium furiosum*. Simuliids have dispersed over 35 miles from their breeding places. *Anopheles annulipes* persisted in rabbit burrows for two months after surface water had dried up.

—H. McL. GORDON.

ANON. (1953). Report on the first Asian regional conference on epizootics (Karachi, 3rd to 9th May, 1952).—*Bull. Off. int. Epiz.* 39, 406-429. [In English.] 1550

Delegates attending the conference were from Afghanistan, Burma, Cambodia, Ceylon, the Republic of China, Hong Kong, India, Indonesia, Iraq, Japan, Laos, Malaya (Federated States), Pakistan, the Philippines, Singapore, Thailand, the U.S.S.R., and Vietnam. The Office International des Epizooties, W.H.O. and F.A.O. were also represented.

The agenda included the discussion of the contagious and infectious diseases position in the countries participating in the conference.

Details are given of the recommendations made by the conference. These include the exchange of information showing the numbers of outbreaks of epizootics monthly and annu-

ally. Movements of livestock should be by mutually agreed routes and should be controlled by veterinary regulations. Immune belts of country, in which the animals are immunized against the prevailing epizootics in neighbouring countries, should be jointly made by the countries of Asia. Representations concerning the desirability of uniform regulations, on a regional basis, to facilitate concerted measures against epizootics were submitted to all the governments of Asia. The attention of these governments was also drawn to the recommendations made at the 16th session of O.I.E. in Paris in May, 1948, regarding the setting up of a regional centre and that international teams of research workers should meanwhile deal with problems which arise. Special measures were also recommended regarding research work on RINDERPEST, HAEMORRHAGIC SEPTICAEMIA and FOOT AND MOUTH DISEASE.

There were some differences of opinion on the formation of a Permanent Committee in Asia.—J. A. GRIFFITHS.

REPUBLIC OF IRELAND. (1953). Twenty-first annual report of the Minister for Agriculture. 1951-52. pp. 1-185+Appendices pp. 1-87. Dublin: Stat. Off. 7s. 1551

There were 212 students enrolled for the 1951-52 session and 38 students obtained the M.R.C.V.S. Diploma. Students may take a degree course for Bachelor of Veterinary Medicine (M.V.B.) at University College (Dublin) which is conferred after qualifying M.R.C.V.S. and passing the degree course examinations, or take a B.A. of Trinity College, Dublin, to qualify for the B.Sc (Vet.) after obtaining the M.R.C.V.S. Diploma.

Details are given of the work of the Departments of the Veterinary College. The Clinical Department treated 6,891 day, 555 hospital and 431 external patients, comprising 5,122 dogs; 1,134 horses; 626 pigs; 517 cattle; 394 cats; 54 sheep and goats; 20 poultry and pet birds; 10 ferrets and g. pigs.

Of 955 specimens sent in to the General Diagnosis Section of the Veterinary Research Laboratory by local authority Veterinary Inspectors for examination for TUBERCULOSIS 81% were positive. Of 355 milk samples from cattle suspected of being infected with TB. 5.07% were positive; 14 sputum and throat swabs were negative; of 46 pus etc. samples 28.26% were positive; of 18 faeces samples 11.11% were positive. Of 20 cows which were reactors to the tuberculin test and in which no macroscopic lesions of TB. were found at P.M. examination, 3 had infected lymph nodes. Of 14 specimens sent in for examination for AN-

THRAX, one from a cow was positive. Of 111 samples of milk 18.91% reacted to the ring test for *Brucella abortus* infection.

Three valuable herds became infected with TRICHOMONIASIS. Treatment, after elimination of infected bulls, cleared up the infection. Artificial insemination was introduced with good results. Experimental treatment of an infected bull failed.

Of 163 pig carcasses and viscera from 10 pigs 46.82% had OEDEMA DISEASE, 10.4% PNEUMONIA and 5.2% ENTERITIS.

BOVINE TUBERCULOSIS was confirmed in 881 cases.

There were 31 outbreaks of SHEEP SCAB involving 334 sheep.

Only one case of ANTHRAX was confirmed.

—J. A. GRIFFITHS.

U.S.A. (1953). **New York State Department of Health. Annual Report of the Division of Laboratories and Research, 1952.** [DALLDORF, G.] pp. 137. Albany: N.Y. St. Dep. Hlth. 1552

There is much evidence from laboratory and clinical investigation to indicate an adverse effect of A.C.T.H. and cortisone in animals having active TUBERCULOSIS. An investigation made by Birkhaug showed that in normal g.

pigs inoculated s/c with graded doses of B.C.G. a variety of modifications of the usual inflammatory and haematological response occurred but that there were no signs of increased pathogenicity of B.C.G. during cortisone treatment over a period of three months.

Direct sunlight can destroy the viability and the antigenic potency of living B.C.G., in vials, in less than an hour.

Investigations on the antifungal agent, fungicidin, continued and other studies were in progress on a new antibacterial agent, phalamycin. The latter is of value not only against various penicillin-resistant staphylococci and streptococci but also against the pneumococcus types 1, 2 and 3 and *Mycobacterium tuberculosis* B.C.G. 888.

A diagnostic skin test antigen for CAT SCRATCH FEVER (benign infectious lymphoreticulosis) was obtained by Elinor Whitney from a patient with a history of cat scratch and regional lymphatic enlargement of a month's duration. Pus from a lymph node contained no recognized organism and caused no disease in animals inoculated with it. After dilution and inactivation by heat it gave a skin reaction in the patient. This antigen is being tested clinically as a diagnostic agent in suspected cases.—J. A. GRIFFITHS.

BOOK REVIEWS

SEELEMAN, M. [Direktor des Instituts für Milchhygiene der Bundesversuchs- und Forschungsanstalt für Milchwirtschaft, Kiel.]. (1954). *Biologie der Streptokokken. Eine Darstellung der biologischen Bestimmungsverfahren der bei Tieren und Menschen vorkommenden Streptokokken unter Berücksichtigung der für Milchhygiene und Milchwirtschaft bedeutenden Arten sowie der epidemiologischen Verhältnisse bei den Streptokokkeninfektionen.* [Biology of streptococci.] pp. xvi+525. Nuremberg: Hans Carl. 2nd Edit. DM 38.50. 1553

This work, written, as stated by the author in the preface, to bridge a gap in German literature, deals with streptococci which occur in animals and man either as agents of disease, secondary contaminants or saprophytically. Special prominence, however, is given to the pathogenic species, particularly those which are of direct or indirect interest to dairy science. About a quarter of the text pages is devoted to *Str. agalactiae* and bovine mastitis. The biology and serology of the many species are described in considerable detail and in clear and concise language, with data on occurrence, characters, media, virulence, nomenclature and classifica-

tion. One of the valuable features of the book is a list of over 800 references. There are numerous tables and 27 illustrations, mostly photomicrographs, and a subject index. Paper, print and binding are of very good quality.

—E.G.

DOBBERSTEIN, J. [Direktor des Veterinär-Pathologischen Instituts der Universität Berlin.], FREI, W. [ehem. Direktor des Veterinär-Pathologischen Instituts der Universität Zürich.], HEMMERT-HALSWICK, A. [Direktor des Veterinär-Pathologischen Instituts der Justus Liebig-Hochschule Giessen.] & HJÄRRE, A. [Direktor des Veterinärmedizinischen Staatsinstituts Stockholm.] (1955). *Allgemeine Pathologie für Tierärzte und Studierende der Tiermedizin.* [General veterinary pathology.] pp. viii+345. Berlin & Hamburg: Paul Parey. 4th revised edit. DM 30. 1554

The subject matter of the fourth revised edition of this well-produced work is divided into four main parts headed:—Introduction, Causation of Disease, General Pathology and General Pathological Physiology.

Under the heading Causation of Disease there are chapters on constitution, heredity, pre-

disposition, trauma, environmental temperature, irradiation, electricity, nutrition, atmospheric pressure, chemicals and toxic agents, micro-organisms and helminth and arthropod parasites. The section on general pathology covers pathological aspects of metabolism and cell structure, metabolic disorders and morphology of local metabolic disorders, disorders of the circulatory system, oedema, resorption, repair and regeneration, inflammation in general and in association with specific infectious diseases, morphology, nomenclature, growth, causation and forms of neoplasms, and teratology.

The last section deals with pathological physiology in metabolic disorders, fever and infections, in alarm reaction and stress.

This work, with its concise style and systematic layout, is a very useful addition to the existing textbooks of veterinary pathology available to students reading German.

There are 120 illustrations and the subject index is adequate.—E.G.

- (1954). **Peripheral nerve injuries.** By the **Nerve Injuries Committee of the Medical Research Council.** [Edited by: SEDDON, H. J.] pp. xvi+451. London: H.M. Stat. Off. *Spec. Rep. Ser. med. Res. Coun., Lond. No. 282.* 55s. 1555

This report is a series of essays by workers in the five Nerve Injury Centres established in Great Britain as part of the Emergency Medical Service. In general it is concerned with the advances made in the diagnosis and treatment of nerve injuries during the war years. The close collaboration of laboratory and clinical workers, and the careful recording and follow-up of cases with a thorough statistical study of the results have led to valuable conclusions being reached on methods of treatment. This book should be of considerable interest to vet-

erinarians engaged in surgery or experimental physiology.—A. T. COWIE.

- LOVERN, J. A. (1955). **The chemistry of lipids of biochemical significance.** pp. xiii+132. London: Methuen & Co. Ltd.; (New York: John Wiley & Sons, Inc.). 8s. 6d. 1556

This publisher's monographs need no introduction, and in this sixth volume of a new series the author has successfully presented, with a chemical bias, an introduction to the biochemistry of fats.

The book is divided into five sections, covering the structure of lipids, their preparation and analysis, lipids in the tissues, the dynamic state of fats in the tissues, and a concluding section on the function of lipids.

—D. S. PAPWORTH.

- HALDANE, J. B. S. (1954). **Biochemistry of genetics.** pp. 144. London: George Allen & Unwin, Ltd. 15s. 1557

The author remarks in the preface that his book is aimed at biochemists rather than geneticists, and that most geneticists who wish to read it may require an elementary biochemistry textbook. The biochemist also requires an elementary book on genetics!

The volume is divided into nine sections:—The elements of genetics; Possible primary products of gene action; Genes controlling synthesis in fungi; Biochemical genetics of yeasts, bacteria and viruses; Biochemical genetics of higher plants; Biochemical genetics of higher animals, including man; Extranuclear influences on biochemical activity, including training; Mutation and the problem of gene production. The author concludes with a collection of thoughts entitled "Tentative Conclusions". This book is very expensive in view of its size and quality of production.

—D. S. PAPWORTH.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

- ALTSCHUL, R. (1954). **Endothelium. Its development, morphology, function, and pathology.** pp. xiv+157. New York (& London): The Macmillan Co. \$3.50. 24s. 6d.

- HACKETT, C. J. (1954). **Manual of medical helminthology.** pp. ix+330. London: Cassell & Co., Ltd. 18s. 6d.

- JACOB, F. (1954). **Les bactéries lysogènes et la notion de provirus. [Lysogenic bacteria and the idea of the prophage.]** pp. viii+176. Paris: Masson et Cie. Fr. 800.

- THORNTON, J. L. & TULLY, R. I. J. (1954). **Scientific books, libraries and collectors. A study of bibliography and the book trade in**

relation to science. pp. x+288. London: The Library Association. 24s.

- UDALL, D. H. (1954). **The practice of veterinary medicine.** pp. x+812. London: Bailière, Tindall & Cox. 6th Edit. 65s.

- VANNOTTI, A. (Translated by: RIMINGTON, C.) (1954). **Porphyrins. Their biological and chemical importance.** pp. 258. London: Hilger & Watts, Ltd. 50s.

- WHITE, M. J. D. (1954). **Animal cytology and evolution.** pp. xiv+454. London: Cambridge University Press. 2nd Edit. 45s.

- (1954). **Connective tissue in health and disease.** [Edited by: ASBOE-HANSEN, G.] pp. 321. Copenhagen: Ejnar Munksgaard. Kr. 50. [In English.]

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